



# SENEY NATIONAL WILDLIFE REFUGE



Canada goose flock at refuge headquarters.

SOME SEVENTY YEARS AGO the forests of Michigan's Upper Peninsula echoed to the ring of the lumberman's axe. Today, in part of this area, a different sound is heard—the wild sweet music of Canada geese that have been induced to nest on Seney National Wildlife Refuge. Of all the wildlife-management practices put into effect at Seney, getting Canada geese to nest on an area where none had nested before is perhaps the greatest achievement.

Seney National Wildlife Refuge was established in 1935 for the protection and production of waterfowl and other desirable wildlife species. The refuge is in the great Manistique swamp, and most of it is open marsh with immense areas of rushes and sedges. Here and there in the vast expanse of marsh are shallow pools of clear, cold water and sandy knolls and ridges that support stands of old Norway pines—survivors from the

days when Michigan led the Nation in lumber production. The great timber-cutting period began about 1870, and by 1890 the Upper Peninsula was practically stripped of its pine forests.

Often fires were deliberately set to clear away the wreckage of past lumbering operations and to make way for new ones. These uncontrolled fires burned the humus down to the sandy substratum and killed the seeds that would have produced a new forest. After the fires burned out, but before nature could restore the area, Seney was exploited by a land-development company that drained acre after acre of soil unsuited to agriculture. The reclaimed acreage was sold through extravagant promises of its productivity, but the buyer-farmers soon learned that crops of sufficient size to provide a livelihood could not be grown. One by one they quit the area, and the worthless lands reverted to the State for taxes.



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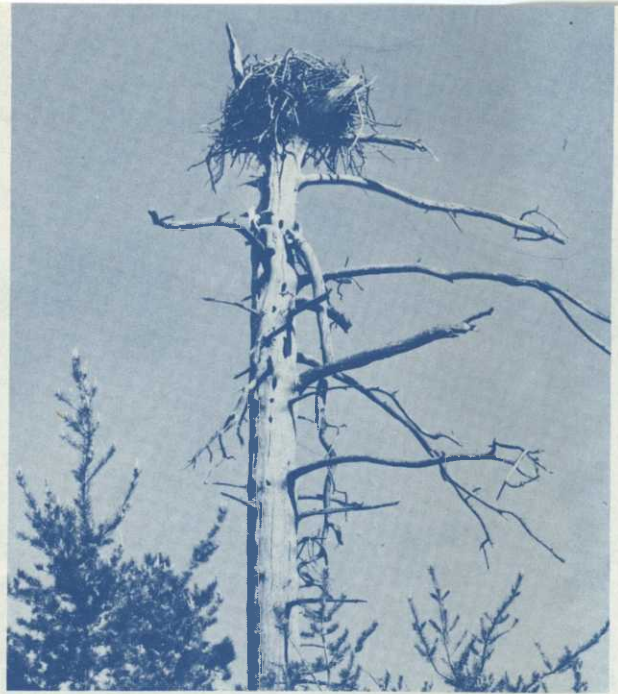


In 1934 the Michigan Conservation Department recommended to the Federal Government that the Seney area be taken over for wildlife development. This was acted upon with the establishment of the refuge. Physical development of Seney's 95,455 acres included moving thousands upon thousands of yards of sand and peat to build an intricate system of dams, dikes, and ditches designed to divert and impound water. Truck trails were built, many of them on the dikes, so that a rapid inspection of the refuge, particularly of the water controls, is possible. Desirable food plants like wild celery and bulrush were established by planting and seeding the margins of channels and pools. Although some of the construction work was done by contractors, much of it was done by emergency agencies set up to relieve unemployment in the 1930's.

The response of wildlife to habitat restoration at Seney has been better than was hoped for. The success of the Canada goose as a nesting species is a fine example of this response. In January 1936, Henry Wallace, a resident of Detroit, gave the refuge a flock of 332 captive-bred Canada geese. The pinioned birds were put in a goose pasture of 400 acres, and the best nesting conditions possible were provided through control of water levels and habitat. Goslings reared by this breeding flock took off in the fall for southern wintering grounds, just as goslings reared in the wild do.

These first Seney-reared birds returned the following spring and, in subsequent years, bred, nested, and reared goslings of their own. This cycle continued so that by 1944 the Canada goose was definitely established as a nesting species, and by 1956 a high point of 2,300 birds was reached.

Nature trails have family appeal.



Bald eagle nest.

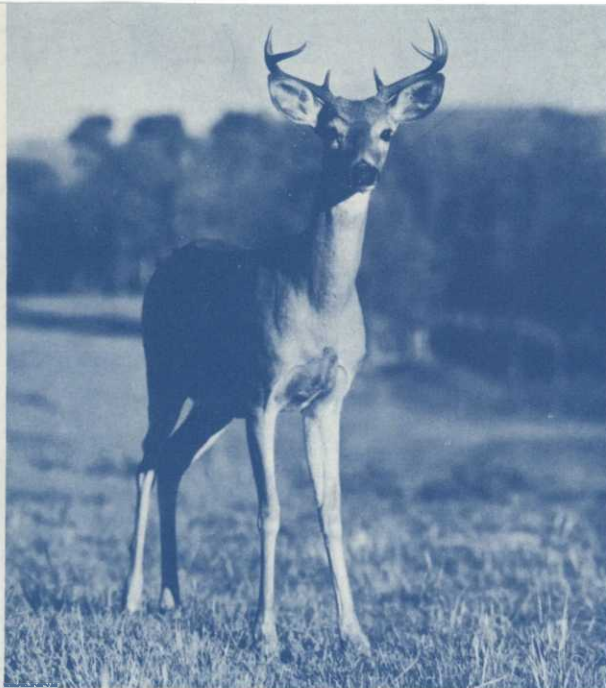
In subsequent years, the flock has experienced a fluctuation in numbers due to hunting, disease, and predation.

Seney geese act as decoys attracting migrant flocks, so that in the fall when Canadian birds wing down from their breeding grounds, they put in at the refuge and add their honking to that of the birds already there. As mornings grow colder and pools ice over, migrants and decoys begin to take off, until finally there are no more wedges of geese flying over the Norway pines and into the gray skies.

Geese—Canadas, snows, and blues—are not the only migratory waterfowl that have been attracted to Seney. The refuge is well within the nesting range of several species of ducks, with the mallard and black duck the most prolific nesters, followed by ringnecks and common and hooded mergansers. Other ducks that nest at Seney in lesser numbers are blue-winged teal and wood ducks.

The shallow waters of the pools, liked by geese, ducks, and other marsh and water birds, range from 1 to 6 feet in depth. Cold and clear, with occasional snags and some submerged brush, these pools are exactly what northern pike like in the way of habitat. Though there are plenty of perch, bullheads, and sunfish, most fishermen who come to Seney cast for pike from the shores of the pools. Public fishing on C-3 Pool begins July 1, after the waterfowl nesting season, and runs through the Labor Day weekend. The Show Pools, just north of the refuge entrance, are open to the public for fishing from Memorial Day through Labor Day except when goose nesting activities necessitate a later opening date.





White-tail deer.

Fishing is not the only public use permitted at Seney for sportsmen. During the last half of November and after the waterfowl have left, 85 percent of the refuge is open to deer hunting in accordance with State regulations. During the season the area west of the Driggs River is open for camping.

Three picnic areas have been developed for Seney's visitors and the traveling public. The attractive Wigwam area is located at the Show Pools. Tables, fireplaces, and rest facilities are also located at C-3 Pool and along Highway M-28 near the Driggs River.

For nature lovers, particularly those interested in birds, Seney's 200-odd species offer a wide variety for study. Conducted and self-guided tours during the summer provide opportunities to see the interior of the refuge and some of the birds and mammals. Special tours can be arranged for organized groups. The daily tour is a 10-mile drive through Unit I over winding roads that skirt first one bracken-edged pool and then another; another possibility is a walking trip of 1½ miles over a nature trail that begins and ends at the Visitor Center.

Located in the headquarters area, the Visitor Center offers a variety of nature exhibits and conservation information. The building is open from 8 a.m. until 4:30 p.m. from May 1 through October 31 with an attendant on duty from June 15 through Labor Day.

Plants of particular interest include sweetfern, Labrador-tea, wintergreen, and bracken. One of the lichen family on the refuge is the British-soldier, a minute growth with a bright red cap. There are many other plants typical of a marsh, and many that are common to higher ground, of

which the refuge has about 55,000 acres. There are three natural areas set aside so that indigenous vegetative types can be studied under conditions as nearly natural as possible. These study areas include about 100 acres of Norway pine, 50 acres of hemlock, and about 400 acres of hardwoods.

Beaver or their workings are easily found. Other fur animals on the refuge are mink, muskrat, otter, coyote, fox, raccoon, skunk, weasel, bobcat, and an occasional wolf. Trapping is carried on as necessary to keep these animals within the carrying capacity of the habitat. Refuge receipts from trapping, timber removal, and other economic uses benefit the local community. Schoolcraft County annually receives three-fourths of 1 percent of the current value of the area or 25 percent of the net receipts collected from its lands, whichever is greater, for use of schools and on roads—revenue the county would not realize if a refuge had not been established there. So the transformation of some 96,000 acres from a drain-scarred barren to a fertile, productive area is conservation in action at its best.

The refuge entrance is 2 miles north of Germfask on Highway M-77. The Visitor Center and administrative office are 1 mile in from the highway. Under the provisions of the Land and Water Conservation Fund Act of 1965 (78 Stat. 897) and the delegated authority of Executive Order 11200 signed by President Johnson February 26, 1965, use of this area by the public may be subject to fees.

Correspondence should be addressed to the Refuge Manager, Seney, Michigan 49883. You may telephone the refuge through the Curtis exchange. Accommodations are available locally in Germfask and Seney; also, at approximately 35 miles distance, in Newberry, Manistique, and Munising.

On your visit to this refuge, or any type of public outdoor area, please practice good sportsmanship—remember the people who will visit after you, not only next week or next year, but in generations to come.

A Seney marsh.











## BIRDS OF THE SENEY NATIONAL WILDLIFE REFUGE



The Seney National Wildlife Refuge, established in 1935, is a unit in the Mississippi Flyway extending from Canada to the Gulf. This 96,000-acre tract is in the northwoods of Michigan's Upper Peninsula, and is an outstanding example of wildlife habitat rehabilitation. It is administered by the Bureau of Sport Fisheries and Wildlife, U. S. Fish and Wildlife Service, in the Department of the Interior.

More than half of the area is marshy in character, with about 7,000 surface acres of water impounded in 20 man-made pools by a network of dikes, plus numerous natural and beaver-made ponds. The soils are extremely poor, consisting for the most part of sand and peat. First devastated by the lumberman's axe, and then by the terrible fires that follow, and the land has since been best adapted for wildlife and recreational uses.

During the summer this refuge is home for a wide variety of interesting wildlife. On a spring morning the air fairly rings with the calls of Canada geese, sandhill cranes, and common loons. A number of ducks nest on the area, with the black duck, mallard, hooded and common mergansers, ring-necked duck, American widgeon, blue-winged teal, wood duck, and common goldeneye being found in approximately that order. Other attractions are three species of grouse, the bald eagle, and many smaller birds including the Le Conte's sparrow.

Establishment of the Canada goose as a nesting species on this refuge began in 1936 with the gift of 308 pinioned birds. A 400-acre fenced goose pasture was provided and the best nesting conditions possible were established through control of water levels and habitat. The goslings reared by this flock were allowed full freedom and it was but a short time before they were flying south in the fall. They now return to the Seney Marshes each spring, nesting throughout the refuge.

While only a part of the refuge is accessible, it is possible to drive over some of the roads built on the dikes. Information on the best areas and directions for reaching them may be secured at the refuge headquarters.

The following bird list contains 199 species which represent observations since 1935. Another 27 species, which are rare or have occurred accidentally, have been added on the last page. This list, using species names, is in accordance with the Fifth (1957) A.O.U. Check-List. The status and abundance symbols are defined as follows:

<u>Status</u>	<u>Abundance</u>
Column 1 - S - March-May	a - abundant
2 - S - June-August	c - common
3 - F - September-November	u - uncommon
4 - W - December-February	o - occasional
	r - rare



	<u>S</u> <u>S</u> <u>F</u> <u>W</u>		<u>S</u> <u>S</u> <u>F</u> <u>W</u>
Common Loon	c c u	Yellow Rail	u u u
Red-necked Grebe	r r r	American Coot	u u c
Horned Grebe	o r u	Semipalmated Plover	u u u
Pied-billed Grebe	c u c	Killdeer	c c c
Double-crested Cormorant	r r r	Black-bellied Plover	o o o
Great Blue Heron	c c c	American Woodcock	c c c
Black-crowned Night Heron	r r	Common Snipe	c c c
Least Bittern	r r	Upland Plover	o o o
American Bittern	c c c	Spotted Sandpiper	c c c
Whistling Swan	u r u	Solitary Sandpiper	c c c
Canada Goose	c c c u	Greater Yellowlegs	c c c
Snow Goose	o u	Lesser Yellowlegs	c u c
Blue Goose	o u	Pectoral Sandpiper	u u u
Mallard	c c c o	Least Sandpiper	u u u
Black Duck	c c c o	Dunlin	u u u
Gadwall	r r	Semipalmated Sandpiper	u u u
Pintail	u r o	Herring Gull	c u c
Green-winged Teal	u o u	Ring-billed Gull	c u c
Blue-winged Teal	c u c	Bonaparte's Gull	o o
American Widgeon	c u c	Common Tern	c c c
Shoveler	o r o	Caspian Tern	o o o
Wood Duck	c c c	Black Tern	o c o
Redhead	o r u	Mourning Dove	o o o
Ring-necked Duck	c c c	Black-billed Cuckoo	c c c
Canvasback	u r u	Great Horned Owl	c c c c
Lesser Scaup	u r u	Snowy Owl	o o o
Common Goldeneye	c o c o	Barred Owl	r r r r
Bufflehead	c r c	Long-eared Owl	o o o
Ruddy Duck	r r r	Whip-poor-will	u u
Hooded Merganser	c c c	Common Nighthawk	c c c
Common Merganser	c c c o	Chimney Swift	c c
Goshawk	o o o o	Ruby-throated Hummingbird	o
Sharp-shinned Hawk	o o o	Belted Kingfisher	c c c
Cooper's Hawk	o o o	Yellow-shafted Flicker	c c c r
Red-tailed Hawk	o o o	Pileated Woodpecker	o o o
Broad-winged Hawk	u u u	Red-headed Woodpecker	r r r
Rough-legged Hawk	u u	Yellow-bellied Sapsucker	u u u
Golden Eagle	r	Hairy Woodpecker	c c c c
Bald Eagle	u u u o	Downy Woodpecker	c c c c
Marsh Hawk	c c c	Black-backed Three-toed	
Osprey	u u u	Woodpecker	r r r r
Peregrine Falcon	r r r	Eastern Kingbird	c c
Pigeon Hawk	o o o	Great Crested Flycatcher	o o
Sparrow Hawk	c c c	Eastern Phoebe	c c c
Spruce Grouse	u u u u	Yellow-bellied Flycatcher	o o
Ruffed Grouse	c c c c	Traill's Flycatcher	c c
Sharp-tailed Grouse	c c c c	Least Flycatcher	c c
Sandhill Crane	c c c	Eastern Wood Pewee	c c
Virginia Rail	u c u	Olive-sided Flycatcher	u u
Sora	u c u	Horned Lark	u o c



	<u>S</u> <u>S</u> <u>F</u> <u>W</u>		<u>S</u> <u>S</u> <u>F</u> <u>W</u>
Tree Swallow	a a c	Chestnut-sided Warbler	c c c
Bank Swallow	c c c	Bay-breasted Warbler	c c
Rough-winged Swallow	u u u	Blackpoll Warbler	c c
Barn Swallow	c c c	Pine Warbler	c c c
Cliff Swallow	u u u	Palm Warbler	c u c
Purple Martin	u u o	Ovenbird	c c c
Gray Jay	o o o o	Northern Waterthrush	c u c
Blue Jay	u u c u	Connecticut Warbler	o r o
Common Raven	c c c c	Mourning Warbler	u u u
Common Crow	c c c	Yellowthroat	c c c
Black-capped Chickadee	a a a a	Wilson's Warbler	u u
Boreal Chickadee	u u u u	Canada Warbler	c u c
White-breasted Nuthatch	o o u u	American Redstart	c u c
Red-breasted Nuthatch	c c c c	House Sparrow	u u u u
Brown Creeper	u u u o	Bobolink	c u
House Wren	u u u	Eastern Meadowlark	c o
Winter Wren	o o o	Redwinged Blackbird	a a a
Long-billed Marsh Wren	u u u	Baltimore Oriole	u u
Short-billed Marsh Wren	a a a	Rusty Blackbird	c c
Mockingbird	r r	Brewer's Blackbird	u u
Catbird	o o o	Common Grackle	a a a
Brown Thrasher	c c c	Brown-headed Cowbird	a a c
Robin	c c c	Scarlet Tanager	o c o
Wood Thrush	u u u	Rose-breasted Grosbeak	c c u
Hermit Thrush	c c c	Indigo Bunting	o o
Swainson's Thrush	c c c	Evening Grosbeak	u u u c
Veery	u u u	Purple Finch	c c c
Eastern Bluebird	c c c	Pine Grosbeak	u r u c
Golden-crowned Kinglet	c c c c	Common Redpoll	a a a
Ruby-crowned Kinglet	u o u	Pine Siskin	c r c a
Water Pipit	u c	American Goldfinch	u u u c
Bohemian Waxwing	o o u	Red Crossbill	u u o c
Cedar Waxwing	c a a	White-winged Crossbill	o o r c
Northern Shrike	o o o	Rufous-sided Towhee	o o o
Loggerhead Shrike	r r r	Savannah Sparrow	c c c
Starling	a a a c	Le Conte's Sparrow	r
Solitary Vireo	u u	Vesper Sparrow	c c c
Red-eyed Vireo	a a a	Slate-colored Junco	a c a o
Warbling Vireo	r r	Tree Sparrow	c c r
Black-and-White Warbler	c c c	Chipping Sparrow	c c c
Tennessee Warbler	c r c	Clay-colored Sparrow	o o
Nashville Warbler	a a a	Harris' Sparrow	r
Parula Warbler	u u u	White-crowned Sparrow	c c
Yellow Warbler	c c c	White-throated Sparrow	c c c
Magnolia Warbler	c c c	Fox Sparrow	
Cape May Warbler	c c	Lincoln's Sparrow	u u u
Black-throated Blue Warbler	u u u	Swamp Sparrow	a a a
Myrtle Warbler	a a a	Song Sparrow	a a a r
Black-throated Green Warbler	c c c	Lapland Longspur	o o r
Blackburnian Warbler	u u u	Snow Bunting	c c a



The following 27 species are of accidental or very rare occurrence. Some have been reported regularly in the past, but not observed in recent years. Station observation data is included.

<u>Observations</u>		<u>Dates</u>
White Pelican	4	June-August 1944
Common Egret	2	8-3-43 and 7-30-49
Green Heron	2	5-6-49 and 7-7-60
White-fronted Goose	2	Spring 1938
Red-breasted Siberian Goose	1	4-18-51
Brant	2	Fall 1937
European Widgeon	2	6-12-46 and 5-4 to 5-17-48
Barrow's Goldeneye	2	4-18-37
Oldsquaw	1	3-16-50
White-winged Scoter	7	April-May 1961
Red-breasted Merganser	8	3-25-38 and 8-4 to 8-11-43
Turkey Vulture	1	4-23-40
Golden Eagle	1	October-November 1950
Greater Prairie Chicken		1935-1952 (*)
King Rail	4	Fall 1935, 1939, 1940, and 7-30-49
Willet	3	10-15-36 and 8-3-55
Short-billed Dowitcher	1	8-5-43
Baird's Sandpiper	3	10-12-36 and 8-26-58
Stilt Sandpiper	1	8-4-43
Marbled Godwit	1	5-18-55
Northern Phalarope	2	9-9-43 and 8-26-58
Screech Owl		Resident in 1936
Hawk-Owl		Winter resident in 1936
Short-eared Owl	1	5-6-37
Saw-whet Owl	3	9-11 to 9-30-39 and 11-10-52
Western Kingbird	1	8-24-53
Loggerhead Shrike	1	5-8-37

(\*) Occurred from 1935 to 1952; last observation was 12-12-52.  
None known to exist in Upper Peninsula today.

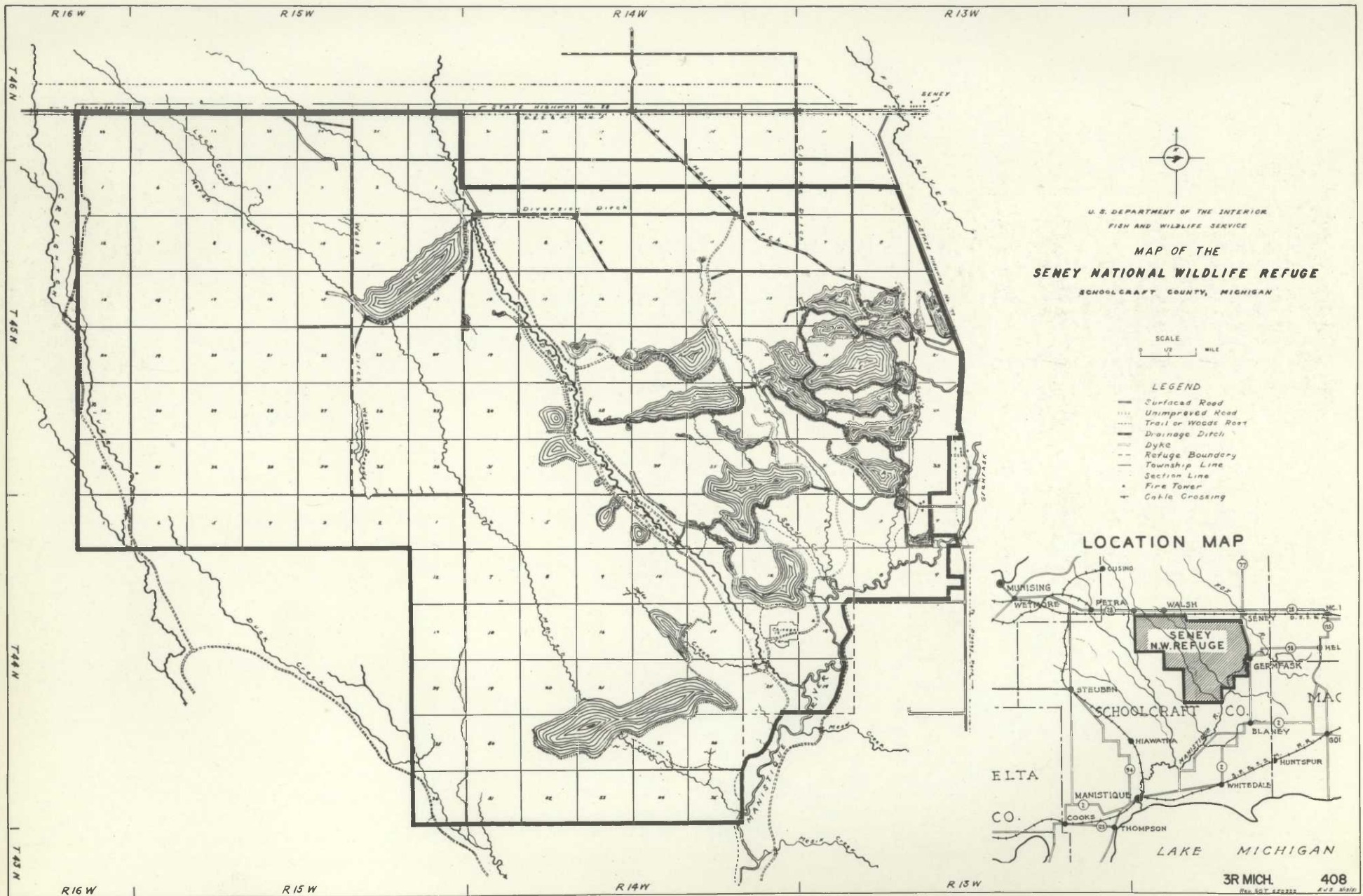
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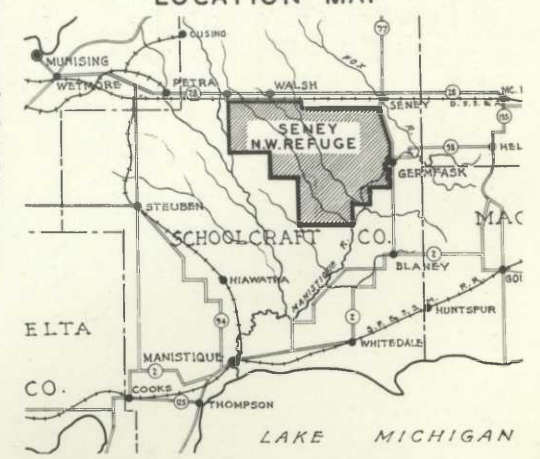
MAP OF THE  
**SENEY NATIONAL WILDLIFE REFUGE**  
SCHOOLCRAFT COUNTY, MICHIGAN

SCALE  
0 1/2 MILE

LEGEND

- Surfaced Road
- - - Unimproved Road
- Trail or Woods Road
- - - Drainage Ditch
- - - Dyke
- - - Refuge Boundary
- - - Township Line
- - - Section Line
- Fire Tower
- Cable Crossing

LOCATION MAP





SENEY NATIONAL WILDLIFE REFUGE

ANNUAL NARRATIVE REPORT

\* 1966 \*

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

SENEY, MICHIGAN



## SENEY NATIONAL WILDLIFE REFUGE

### PERSONNEL

Refuge Manager . . . . .	John B. Hakala	
Assistant Refuge Manager . . . . .	Orlynn J. Halladay	
Wildlife Biologist . . . . .	Gerald H. Updike	
Refuge Forester . . . . .	Roy J. Milligan	*
Refuge Clerk . . . . .	Omer L. Doran	
Mechanic . . . . .	George Orlich	
Maintenance Man . . . . .	William G. Anderson	
Maintenance Man . . . . .	Glen C. Losey	
Wildlife Aid . . . . .	R. Todd Eberhardt	**
Wildlife Aid . . . . .	Tommy J. Early	***
Wildlife Aid . . . . .	George H. Studinski	****

\* \* \* \* \*

\* Transferred to Iroquois Job Corps Conservation Center,  
Medina, New York on 06-01-66

\*\* E.O.D. 06-13-66 \*\* Terminated 09-09-66

\*\*\* E.O.D. 06-14-66 \*\* Terminated 09-09-66

\*\*\*\* E.O.D. 06-16-66 \*\* Terminated 09-09-66



# SENEY NATIONAL WILDLIFE REFUGE

## TEMPORARY PERSONNEL

### Summer Seasonals (Laborers)

	<u>E.O.D.</u>	<u>Terminated</u>
Robert L. Burns *	06-14-66	09-02-66
Garth R. Jacobson	06-20-66	09-09-66
Leo D. Lawrence	04-25-66	10-25-66
Harold E. Miller	06-15-66	09-09-66
Kim R. Strawe	06-20-66	09-09-66
Lawrence Zellar	05-15-66	11-15-66

\* Mr. Burns was hired under the President's Youth Opportunity Program on 06-14-66, was terminated 06-20-66 and rehired on 06-20-66 as a seasonal laborer.

\* \* \* \* \*

### President's Youth Opportunity Program

	<u>E.O.D.</u>	<u>Terminated</u>
Anthony D. Handrich	06-13-66	09-09-66
Susan L. Jack	06-13-66	09-09-66
Donald E. Lloyd	06-20-66	09-06-66



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# I. GENERAL

## A. Weather Conditions

	<u>Month</u>	<u>Precipitation</u> <u>Normal *</u>	<u>Snowfall</u>	<u>Max.</u> <u>Temp.</u>	<u>Min.</u> <u>Temp.</u>
January	<u>1.65</u>	<u>1.75</u>	<u>47.5</u>	<u>45</u>	<u>-22</u>
February	<u>1.61</u>	<u>1.76</u>	<u>18.5</u>	<u>44</u>	<u>-11</u>
March	<u>3.80</u>	<u>1.80</u>	<u>17.5</u>	<u>52</u>	<u>- 4</u>
April	<u>1.63</u>	<u>2.57</u>	<u>6.0</u>	<u>61</u>	<u>23</u>
May	<u>1.91</u>	<u>3.52</u>	<u>      </u>	<u>76</u>	<u>14</u>
June	<u>2.83</u>	<u>3.20</u>	<u>      </u>	<u>89</u>	<u>30</u>
July	<u>.90</u>	<u>2.40</u>	<u>      </u>	<u>96</u>	<u>43</u>
August	<u>4.75</u>	<u>3.39</u>	<u>      </u>	<u>86</u>	<u>41</u>
September	<u>3.04</u>	<u>4.50</u>	<u>      </u>	<u>86</u>	<u>30</u>
October	<u>5.10</u>	<u>3.26</u>	<u>      </u>	<u>69</u>	<u>24</u>
November	<u>4.50</u>	<u>3.36</u>	<u>38.0</u>	<u>47</u>	<u>12</u>
December	<u>1.89</u>	<u>2.44</u>	<u>38.5</u>	<u>41</u>	<u>- 4</u>
Annual Totals	<u>33.61</u>	<u>33.95</u>	<u>158.0</u>	<u>Extremes 96</u>	<u>-22</u>

The weather data listed above were collected from daily weather observations at the official weather station located at refuge headquarters.

\* Based on a ten year average (1956-1965)



January: The high temperature of  $45^{\circ}$  for the month was recorded and the ground was 90% free of snow on the first day of the new year. High temperatures ranged in the upper 20's and low readings in the upper teens for the first three weeks of the period. The temperature dropped to  $-2^{\circ}$  on the 24th with sub-zero readings recorded on the following six days. Low temperature for the month and year occurred on the 12th when the mercury fell to  $-22^{\circ}$ . Snowfall was 47.5 inches, as compared to 35.0 inches a year ago; however, warm temperatures and intermittent rains kept the snow accumulation low. At the close of the period the average snow depth was 20.5 inches, as compared to 24.0 inches in 1965. Also, a total of 1.65 inches of precipitation was recorded during the period. Snow fell on 26 days during the month with the greatest, 8 inches, coming on the 27th.

February: Temperatures were above normal with highs in the upper 30's and low 40's. Low temperatures ranged from  $37^{\circ}$  to  $-11^{\circ}$ . Sub-zero readings were observed on 4 days of the period. The high reading of  $44^{\circ}$  was recorded on the 9th while the low of  $-11^{\circ}$  was observed on both the 18th and 19th. Snowfall was 18.5 inches as compared to 38.0 inches a year ago. Precipitation totalled 1.61 inches. Snow depth was 8.0 inches compared to 21.0 inches in 1965 at the close of the period.

March: Temperatures continued above normal. Highs ranged mostly in the 40's and upper 30's with 3 days in the 50's. Lows were also above normal with only one day of sub-zero temperature ( $-4^{\circ}$ ) on the 8th. This was the last sub-zero reading prior to spring breakup. A high of  $52^{\circ}$  was observed on the 18th and 21st. A total of 17.5 inches of snow fell during March, as compared to 23.5 inches a year ago. Precipitation totalled 3.80 inches. The snow had completely disappeared by the 20th but on the 23rd another 3 inches fell. At the close of the period only a trace remained as compared to 19 inches in 1965.

April: Above normal temperatures continued with a high of  $61^{\circ}$  and the low  $23^{\circ}$ . A year ago the high was  $69^{\circ}$  and the low  $0^{\circ}$ ; however, this year temperatures remained in the high 40's and 50's throughout the month. The evaporation tank was installed on the 16th and fire weather observations began. Snow fall was 6.0 inches versus 4.5 inches in 1965. Snow was on the ground for the first five days of the month resulting from the 4.0 inch snowfall on the 1st. Rain fell on 13 days of the period with a total of 1.63 inches recorded.

May: High temperatures ranged from the upper 40's to the mid 70's. The high of  $76^{\circ}$  was recorded on the 25th. Minimum temperatures were from the upper 20's to the mid 40's with one night remaining at  $67^{\circ}$ . Rainfall, totalling 1.91 inches, fell on 11 days with



.79 inches recorded on the 24th. As a result, the ground was very dry and fire hazard high to very high, as reported under the "National Fire Danger Rating System", throughout the period. Average rainfall for May is 2.62 inches while 5.46 inches were recorded in 1965.

June: Temperatures ranged from the middle 70's to the high 80's with only 4 days in the upper 60's. A high of 89° was recorded on the 29th. Low temperatures remained in the 50's and 60's. Precipitation, recorded on 8 days of the period, totalled 2.83 inches, slightly above the 2.30 inches received a year ago. However, from the 3rd to the 7th, 2.64 inches fell with 1.41 inches rain recorded on the 5th. Lawns started burning by the end of the period. Fire danger remained high throughout the month.

July: Twenty-four days of 80° or higher, with six days in the 90's, were recorded this period. Low temperatures remained in the 60's most of the month. Precipitation, totalling .90 inches, fell on 8 days compared to July norm of 2.40 inches. All lawns were completely burned to the point where very few areas recovered. Very little wind was recorded but fire danger ratings remained high.

August: Temperatures dropped slightly this month with the highs in the 70's and 80's. The high of 86° was recorded on the 29th. Lows remained approximately the same as July with temperatures recorded mostly in the 60's. Rain fell on 17 days and totalled 4.75 inches, with 2.01 inches coming on the 7th. During 1965, 4.33 inches of rainfall were recorded. Fire danger ratings were low due to intermittent rain which kept the ground moist throughout the month.

September: Temperatures began falling with 4 days of frost recorded during the period with a low of 30° on the 15th. The high temperature of 86° occurred on the 1st and by the end of the month, temperatures had gradually fallen to the upper 50's. Precipitation was recorded on 12 days, totalling 3.04 inches, with 1.28 inches on the 29th. A year ago 6.87 inches of rain fell. The ground remained moist with fire danger ratings ranging from low to moderate.

October: Temperatures continued dropping. Highs ranged mostly in the 50's with eight days in the 60's and a high of 69° on the 30th. Precipitation occurred on 17 days totalling 5.10 inches. A year ago 2.59 inches of rain fell on 19 days. Water levels were high and subsequently fire danger ratings remained low.

November: Temperatures were much lower, averaging 5-10 degrees below those of a year ago. High temperature for the month was 47° on the 22nd with a low of 12° on the 5th and 14th.

The first snowfall of the winter season, 1.5 inches, occurred on the 1st and during the following 5 days 14 inches more fell. On

the 28th one of the worst blizzards in Upper Peninsula history hit the area knocking out power lines, stranding hundreds of motorists and damaging thousands of trees. By the end of the month 38.0 inches of snow and 2.20 inches of rain had fallen, totalling 4.50 inches of precipitation. Snowfall doubled that of 1965. Snow cover at the close of November was 11.0 inches. Fire danger ratings were discontinued on the 1st due to snow cover.

December: Temperatures ranged from a low of  $-4^{\circ}$  on the 2nd to a high of  $41^{\circ}$  on the 6th and 7th. Snowfall measured 38.5 inches compared with 16.0 inches a year ago. Total precipitation varied from 1.89 inches to 1.80 inches for the two years respectively. At the close of the period 18.0 inches of snow was on the ground as compared to only one-half inch in 1965. Snow for the fall period more than doubled that of 1965 -- 37.0 inches versus 76.5 inches. The 158.0 inches of snow recorded in calendar year 1966 was an all-time high for this station according to weather records dating back to 1939. The previous high, 150.7 inches, occurred in 1950.

## B. Habitat Conditions

### 1. Water

Spring break-up and run-off occurred during the latter part of March. Pools were raised and some geese had selected nesting islands when blizzard-like conditions froze the pools and forced the birds to seek sheltered areas. Pools had to be lowered and raised a second time during the middle of April when peak run-off occurred.

During July, water levels dropped rapidly due to very dry conditions and years of heavy siltation. As a result, beaver attempting to supply their own water needs constructed dams on Diversion Ditch. Sufficient rainfall during the remainder of the season and removal of three dams corrected the situation for this year.

Two pools were drawn down for scheduled improvements in 1966. Lower Goose Pen was drawn down in August and September for extensive habitat improvement work. D-1 Pool was drawn down during January and February and again from July through the end of the year. Due to adverse weather conditions, the scheduled habitat improvement work and culvert replacement were not initiated. However, the draw-downs were beneficial to fish eating mammals, eagles, waterfowl and several species of shore birds as evidenced by their numbers using the pool area.

All pools were maintained at or just below recommended levels throughout the year.



Permanent freeze-up occurred almost over-night on November 27 when a severe storm hit the area. Freeze-up was three weeks earlier than in 1965.

## 2. Food and Cover

Generally, there was ample food and cover for all species of wildlife. Early returning Canada Geese found food in short supply so refuge personnel put corn out for them and during bad storms many of the birds took shelter on the Manistique River.

Waterfowl made good use of the aquatic plants after pool levels were dropped in June. I-1, B-1, C-1 and C-2 Pools received heavy use by dabbling ducks. D-1 Pool and the Lower Goose Pen, which were drawn down part of the summer, received extremely heavy use by waterfowl, especially geese. Canada Geese were very fond of the new rye plantings at sub-headquarters and many lingered on for quite some time.

Canada, Snow and Blue Geese were observed on all farm units during the year. Geese made excellent use of the mature oat crop at sub-headquarters which could not be harvested because of prolonged rainfall. Geese also made morning and evening flights from many parts of the refuge to Conlon Field where they cleaned up some of the standing buckwheat and all that was left after the harvest. Chicago Farm did not receive the utilization in 1966 that it had in past years. Diversion Unit received good use by geese and Walsh Unit fair use.

Mallards and Black Ducks made excellent use of the unharvested oat crop at sub-headquarters. As many as 200 were seen settling into the field during the day.

White-tailed Deer were observed on all farm units. Black Bear sign was very much in evidence around juneberry and wild cherry trees.

Sandhill Cranes and Sharp-tailed Grouse made extensive use of the farm units.

## II. WILDLIFE

### A. Migratory Birds

#### 1. Waterfowl

##### a. Geese

The first Canada Geese arrived on the afternoon of March 4. Manager

Hakala observed the birds, yellow neck collar V3 and her mate, from the office. All pools were completely ice-covered at the time but snow depths averaged only five inches. The March 4 appearance is one of the earliest on record and nine days earlier than in 1965.

By March 15 the number of returning geese reached 200 and by March 29 the number was 400. A final tally of returning Seney geese was recorded at less than 500 on April 11, about 50 fewer than returned one year ago.

Egg laying commenced on April 4 when there was only a trace of snow on the ground. The first broods of geese were observed at J-1 Pool on May 9. In 1965 the first brood was observed on May 17.

Nest depredation by Raccoon and Coyote was reduced even more from the 1965 level. They destroyed 57 nests (24%) and 190 eggs (17%) in 1966. One goose was killed on the nest at Upper F Pool, and a second on the nest at G-1 Pool.

Eggs hatched totalled 818 compared with 676 in 1965. The 1965 and 1966 nesting survey summaries are presented in Table 1.

Table 1. A Comparison of Results of the 1965 and 1966 Canada Goose Nesting Surveys at Seney Refuge.

Subject	1965		1966	
	Number	Percent	Number	Percent
Nests Destroyed	61	27.0	57	24.0
Nests Deserted	12	5.0	8	3.0
Nests Hatched	152	68.0	174	73.0
Total Nests	225	100.0	239	100.0
Eggs Destroyed	267	25.0	190	17.0
Eggs Unhatched	92	8.0	78	7.0
Eggs Deserted	43	4.0	29	3.0
Eggs Hatched	676	63.0	818	73.0
	1,078	100.0	1,115	100.0

For the second straight year no severe losses occurred to goslings. In 1964 the entire nesting effort was nearly wiped out by disease.

Fall migrant numbers of geese increased over 1965. Peak populations of Canadas, Blues and Snows were recorded at 5,100, 150 and 100 respectively (Table 2.). Although peak numbers were increased, fall use days were down from 234,000 last year to 218,000 this year (Figure 1). The severe storm of November 27 and 28 moved all but



a few of the resident Canada Geese off the refuge, thereby, accounting for the reduced number of fall use days.

Table 2. Peak Fall Goose Numbers at Seney Refuge, 1962 - 1966.

Species	1962	1963	1964	1965	1966
Canada Goose	3,200	4,400	6,000	4,400	5,100
Blue Goose	13	150	600	150	175
Snow Goose	7	100	400	100	100
Total Geese	3,220	4,650	7,000	4,650	5,375

During the fall period, four neck collared Canada Geese from other areas were observed at the Lower Goose Pen. It was learned that all of these geese were captured late in 1965 both in Missouri and Illinois. The geese were then transferred to refuges in Tennessee, Arkansas and Mississippi where they were neck collared before being released.

The last of the Seney geese departed from headquarters on December 2 in a snowstorm. One goose was reported seen January 5, 1967 on the Chicago Farm Road near the Manistique River by Herbert Musselman.

Snow and Blue Goose numbers were about the same as 1965 but much lower than the numbers recorded in 1964. Their main influx into the refuge came the third week of October, two weeks earlier than last year.

Banding efforts in 1966 resulted in the capture of 570 Canada Geese. Bands were placed on 343 of these birds as the rest were retraps. Almost all of the birds were captured by means of drive traps on E-1, F-1 B-1, A-2 and C-3 Pools during July. Table 3 shows the results of goose trapping efforts since 1957.

Table 3. Seney Canada Goose Banding and Kill Data, 1957 - 1966.

Year	Number Banded	Number Retraps	Total Trapped	Total Returns	Direct Returns	% Direct Returns
1957	42	6	48	16	10	23.8
1958	186	19	205	37	20	10.6
1959	230	46	276	26	16	8.7
1960	160	227	387	12	6	3.8
1961	119	64	183	7	7	6.7
1962	345	86	431	47	19	5.5
1963	219	155	374	36	15	6.8
1964	316	225	541	46	15	4.7
1965	168	107	275	78	30	17.3
1966	343	227	570	--	--	----

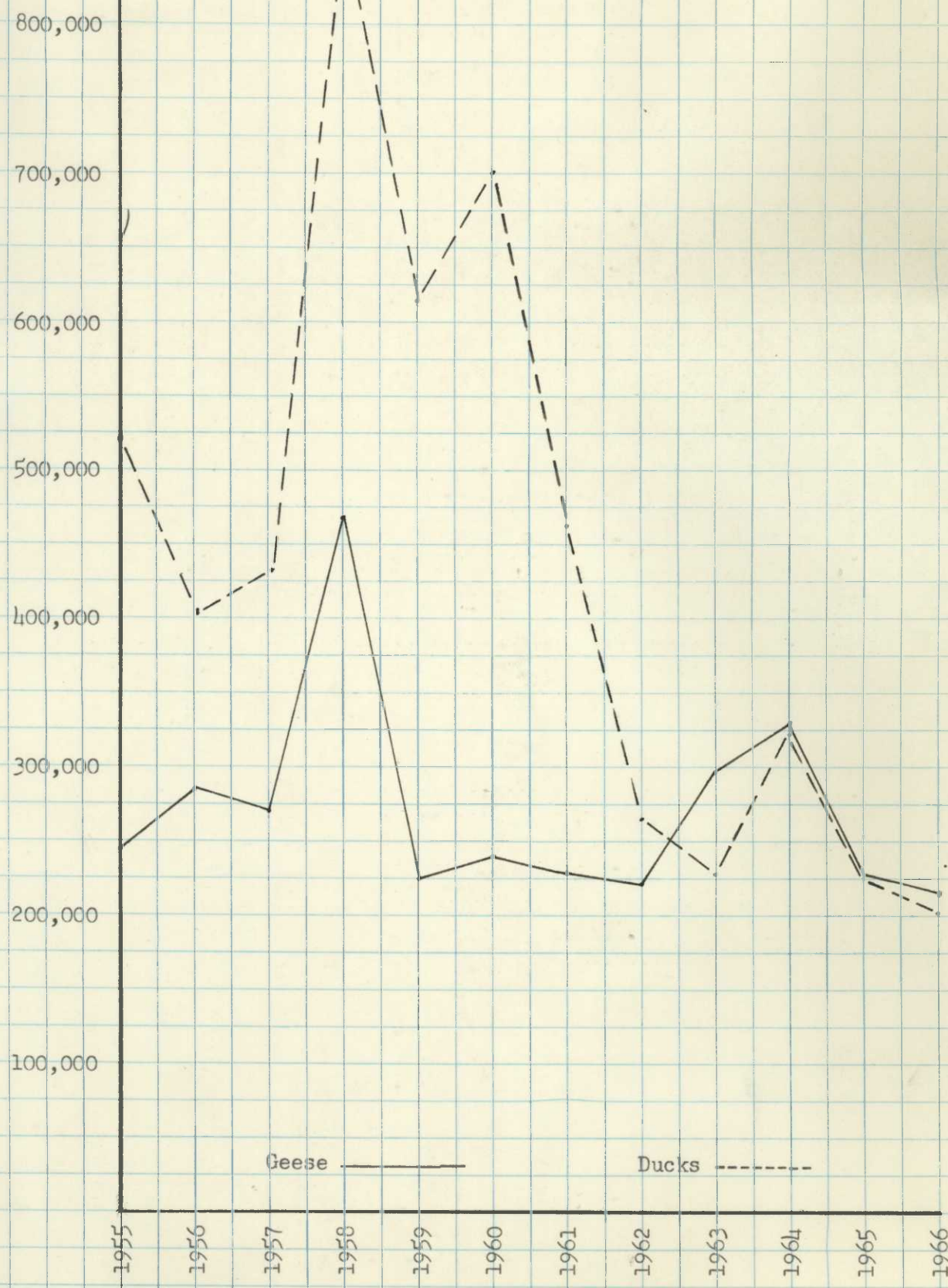


Figure 1. Goose and Duck Use Days, September - December, 1955 - 1966



Although drive trapping has proven successful, it is not known how many of the geese are immature molters from southeastern Michigan, thereby, confusing the band return information. A bird captured on B-1 Pool in July had a white plastic leg band but no Service band. It was later learned that this bird was banded as a gosling in 1965 at Shiawassee National Wildlife Refuge and had since lost its Service band.

b. Ducks

The duck population remained low at Seney for the fourth consecutive year (Table 4). Total production for 1966 was calculated at 1,005, the same as in 1965.

Table 4. Peak Duck Numbers and Use Days for May through August, 1958 - 1966.

<u>Year</u>	<u>Population Peak</u>	<u>Use-Days</u>
1958	6,755	704,040
1959	6,686	571,582
1960	3,445	239,820
1961	4,100	300,521
1962	3,670	266,700
1963	1,600	179,313
1964	2,365	220,788
1965	1,595	157,624
1966	1,540	172,935

Table 5 shows the peak fall duck population and Figure 1 compares fall duck and goose use-days.

Table 5. Peak Fall Duck Populations at Seney Refuge, 1963 - 1966.

<u>Species</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
Mallard	1,000	1,000	650	650
Black Duck	900	1,000	800	650
Pintail	0	15	5	10
Green-winged Teal	300	300	150	75
Blue-winged Teal	300	500	500	500
Baldpate	325	800	150	300
Woodduck	300	450	150	350
Redhead	15	10	10	0
Ring-necked Duck	3,000	3,200	4,500	4,000
Canvasback	0	0	0	0

Scaup	10	250	25	10
Goldeneye	50	50	50	75
Bufflehead	40	100	75	20
Ruddy Duck	0	0	0	0
Hooded Merganser	250	150	150	100
Common Merganser	250	140	150	60

Even though duck numbers were down, excellent duck banding results were attained (Table 6). The total of 2,020 ducks banded was more than double the previous high of 917, banded in 1952. The exceptional success was attributed to: intensive prebaiting efforts, establishment of a trap line in Unit II, use of modified dove traps (constructed from a photograph in the 1965 Carolina Sandhills National Wildlife Refuge circulating Narrative Report), banding of Ring-necked Duck broods and the intensive trapping effort during August. Good catches of ducks were made at the Lower Goose Pen using the cannon-net.

**Table 6. Ducks Banded at Seney National Wildlife Refuge -- 1966**

Species	Adult Female	Adult Male	Imm. Female	Imm. Male	Local Female	Local Male	Unk.	Totals
Mallard	76	44	259	246	0	0	0	625
Black Duck	29	40	166	219	3	2	2	461
Woodduck	31	165	34	37	4	7	0	278
Ring-necked Duck	22	0	22	22	61	56	2	185
Blue-winged Teal	31	19	193	200	0	0	0	443
Green-winged Teal	3	6	7	8	0	0	0	24
Pintail	0	0	2	0	0	0	0	2
Hooded Merganser	0	0	1	1	0	0	0	2
Totals	192	274	684	733	68	65	4	2,020

Table 7 compares duck banding results and catches for the years 1964 through 1966.

**Table 7. A Comparison of Duck Banding Results -- 1964 - 1966.**

Item	1964	1965	1966
Ducks Banded	461	433	2,020
Predation Loss	44 (9.5%)	17 (3.9%)	55 (2.7%)
Drowning Loss	5 (1.1%)	1 (0.4%)	14 (0.7%)
Traps in Use	15	13	21
No. Trapping Days	64	61	70
Man Hours Expended	200	250	490
Ducks Banded/Man Hour	2.3	1.7	4.1
Ducks/Trap/Day	.48	.53	1.37
Approx. Total Cost	\$600.00	\$650.00	\$1,900.00
Cost/Banded Duck	\$ 1.30	\$ 1.50	\$ .94



c. Coot

Coot are not common at Seney. Their peak fall numbers were 50, the same as in 1965 but much lower than the 1963 high of 300. About 40 coot spent three weeks along the south side of E-1 Pool and one coot was banded on D-1 Pool.

d. Swans

Four Whistling Swans were observed during the spring migration. Two were seen April 11 on H-1 Pool and two others were seen frequently on J-1 and H-1 Pools between May 30 and June 5.

Five swans were noted during the fall migration period. This group, two adult and three cygnets, spent October 31 through November 14 on I-1 and E-1 Pools.

2. Other Waterbirds

The first returning Common Loon was seen on April 7, 18 days earlier than in 1965. Twelve pairs nested on the refuge and raised approximately 20 young. The first chick was observed on June 12. Total refuge population was estimated to be 45 at the end of the summer period, five more than in 1965. Last loon observation was recorded on September 15.

Sandhill Cranes were first observed at sub-headquarters on April 3 -- five days earlier than in 1965. They were commonly observed throughout the refuge during 1966. Following the hatch, the estimated population was 90, the same as a year ago. Cranes were last observed on October 10 at Conlon Field.

April 14 was the arrival date of the Great Blue Heron. Their peak numbers remained at an estimated 100.

Pied-billed Grebes were observed at frequent intervals, especially on B-1 Pool, from April until October. An estimated 50 were using the refuge by fall.

American Bitterns were noted quite frequently by refuge personnel. Approximately 125 bitterns were using the refuge at the end of the summer period.

Green Herons, not frequently seen in most years, were observed quite often during July and August.

3. Shorebirds and Gulls

The first common snipe was noted on April 12, ten days earlier than 1965. Their "winnowing" continued well into July.

Greater Yellowlegs, Killdeer, Spotted Sandpiper, Black Terns, Ring-billed Gulls and Herring Gulls were noted on the refuge from time to time.

#### B. Upland Game Birds

Woodcock numbers appear to be increasing at Seney during the past few years. The Woodcock singing ground count, conducted May 10, recorded 32 "peenting" birds. This is an increase of six over the 1965 count and is double the 1964 count. Peak fall numbers were estimated at 4,000 but no intensive inventory work was done. Kim Strawe, Student Laborer, made a brief study of the Woodcock (Seney Refuge files).

Sharp-tailed Grouse numbers appear to be a little higher than a year ago. Dancing ground counts tallied 91 birds this year compared to 84 in 1965. An estimated 275 were using the refuge by early fall. Student Laborer Garth Jacobson located and marked all new dancing grounds with large white posts. He also completed a brief report on the status of the Sharp-tailed Grouse at Seney (Seney Refuge files).

Observations of Ruffed Grouse indicated that their numbers were slightly increased over 1965. An estimated 1,750 were on the refuge starting the fall period.

Incidental observations of Spruce Grouse were slightly below those of 1965. Spruce Grouse were sighted just north of Walsh Farm in addition to several observations recorded from the Jack Pine-Black Spruce habitat on the southern areas of the refuge. The fall population was believed to be approximately 100.

#### C. Big Game Animals

The first White-tailed Deer observation was made March 29, three weeks earlier than last year. Deer winter south and east of the refuge but were not closely confined to the yards during the 1965-66 winter season. However, severe storms early in the 1966-67 winter season have forced deer to concentrate in the yards and with continuing bad weather there could be heavy starvation losses. The first fawn was observed on June 6.

During the May-October tally period, observed deer totalled 1,159 for 1,682 man-hours in the field. This was 0.69 deer per man-hour in the field and the buck:doe:fawn ratio was 1.0:3.0:1.4. Deer numbers were estimated at 1,700 just before the hunting season.

Hunting conditions were good but early storms had moved many deer away from the refuge. Hunters removed 130 deer, 80 less than in 1965. In cooperation with the Michigan Department of Conservation,



a hunter check station was maintained during the first three days of hunting. Of 38 deer examined (30 male and 8 female), the average age was  $2\frac{1}{2}$  years with the oldest being a  $7\frac{1}{2}$  year old, eight-point buck. Among the bucks with spikes at least three inches long, the average rack was six total points and the average beam diameter (taken one inch from the base) was 23.3 mm.

Black Bear observations remained high for the second straight year. Ten sightings were made in 1966, only three less than 1965. One bear and her cub found the student cabin garbage can to their liking during July. One bear was reported taken during the hunting season and an estimated 20 were using the refuge at the end of the period.

No Moose or their tracks were noted on the refuge in 1966.

#### D. Fur Animals, Predators, Rodents and Other Mammals

The refuge Otter population was estimated to be about 150 animals. No Otter have been removed since the trapping season of 1960.

Beaver numbers increased again in 1966. These animals have created several excellent waterfowl floodings throughout the refuge. Beaver did affect the flow of water from Upper Goose Pen and along the Diversion Ditch during the year but these "problem" animals were live trapped and moved to areas where they will be of value to the refuge program. Schoolcraft County was opened to Beaver trapping in 1966 but the refuge remained closed as the area is capable of supporting more Beaver.

Muskrat numbers remain low but appear to be coming back strong in certain areas, especially below C-3 dike. While control trapping for Mink, the permittee trapper caught 60 muskrat. These animals were in good condition and this "accidental success" shows the need for a more intensive inventory of the Muskrat.

Mink were noted frequently during the year. These animals destroyed a total of 52 captured ducks during the banding operation. A Mink control program was carried out with the trapper concentrating his efforts near the duck trapping sites. A total of 34 Mink (17 male and 17 female) were removed by the trapper and two Mink were destroyed in duck traps. The refuge Mink population was estimated at 500 at the end of the winter period.

Woodchuck were frequently observed along refuge roads from the first sighting on March 17 until September.

The Striped Skunk is not numerous in this area although seven were removed from the pool area in 1966.

Refuge mammalian predators include Coyote, Red Fox, Bobcat and Raccoon. Fox and Bobcat numbers are low and they are not presently a problem species. Populations of Coyote and Raccoon remain high despite an active annual control program. During 1966 refuge personnel and one permittee trapper removed 56 Raccoon, 28 Coyote, six Bobcat and one Red Fox. Eight Porcupine were accidentally trapped.

No observations of Gray Wolf were made.

Observations indicate that Varying Hare numbers are about the same -- approximately 1,000.

Other mammals observed throughout the year include Red Squirrel, Gray Squirrel, Eastern and Least Chipmunks, Flying Squirrel, bats, mice and voles.

#### E. Hawks, Eagles, Owls, Crows and Ravens

The Marsh Hawk was the most abundant hawk again in 1966. Other hawks of this area include: Pigeon Hawk, Sparrow Hawk, Rough-legged Hawk, Broad-winged Hawk, Osprey and Sharp-shinned Hawk. *And Goshawk.*

Bald Eagles were seen frequently during the spring-summer-fall period and infrequently during the winter period. Productive nests were found on E-1 and C-2 Pools. Eagles were seen at the B-1, C-3 and M-2 nest sites but no egg laying appeared to take place.

Three eaglets reached flight stage from the E-1 nest and one from the C-2 nest. Total refuge population in 1966 was 12, two more than 1965.

Of interest are the observations of eagles in the immature plumage working on a nest. One bird was seen patching up the C-3 nest but no other activity was noted. Apparently one adult eagle was lost during the winter as only one adult, accompanied by a bird in the immature plumage, returned to the B-1 nest which had been successful the past few years. Both birds worked on and looked over the two nests on B-1 Pool for some time but no egg laying took place.

No Snowy Owl observations were made in 1966.

Great Horned Owls and Barred Owls were seen and heard infrequently.

Crows were abundant in the spring and one crow was seen destroying a goose egg on an island in T-2 Pool.

#### F. Other Birds

Spring arrivals of some of the other birds, as recorded by refuge personnel, are shown in Table 8.



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Table 8. Spring Arrival Dates of Birds at Seney Refuge, 1966.

<u>Date</u>	<u>Species</u>	<u>Date</u>	<u>Species</u>
3-14	Red-winged Blackbird	4-2	Myrtle Warbler
3-17	Robin	4-7	Yellow-shafted Flicker
3-18	Killdeer	4-14	Kingfisher
3-21	Rusty Blackbird	4-15	Song Sparrow
3-22	Field Sparrow	4-15	Tree Swallow
3-22	Swamp Sparrow	4-15	Purple Martin
3-25	Fox Sparrow	4-19	Cowbird
3-25	Tree Sparrow	4-21	Eastern Phoebe
3-25	Eastern Meadowlark	5-11	Mockingbird

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Results of the 1966 Christmas Bird Count, conducted by Maintenance-man Losey and Biologist Updike, on December 27, are shown in Table 9.

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Table 9. Results of the 1966 Christmas Bird Count.

<u>Species</u>	<u>Number</u>
Hairy Woodpecker	3
Blue Jay	1
Common Raven	11
Ruffed Grouse	1
Pileated Woodpecker	1
Downy Woodpecker	1
Gray Jay	4
Common Crow	1
Black-capped Chickadee	46
Red Crossbill	21
Snow Bunting	45
Pine Grosbeak	2

Totals: 12 species -- 137 individuals

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Manager Hakala went to the Willard Harkness Farm east of Germfask and verified the sighting of a Mockingbird on May 11. A Mockingbird was also sighted around headquarters for a period last spring.

On December 13 Clerk Doran observed 30 Red Crossbills at refuge headquarters. Crossbills have been seen frequently since then and many have been killed on the highway while picking grit as they have little fear of cars.

G. Fish

Michigan Department of Conservation fishery biologists netted fish from a number of refuge pools during April. They removed 342 Northern Pike, 282 Yellow Perch, 1,669 bullheads and 14 White Suckers as shown in Table 10. The pike catch was down considerably from the 1965 total of 747. Fishery Biologist Leland **Anderson** attributed this reduction to earlier spawning runs and he has hopes of setting nets under the ice at an earlier date next spring. In accordance with the cooperative agreement, 20% of the legal sized pike (20 inches and over) were placed in the refuge Show Pools (56 in 1966) for public fishing use. The remaining pike were released in two nearby spawning marshes and all other fish were placed in the Show Pools (Table 11).

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Table 10. Fish Removal Record from Refuge Pools, 1966.

<u>Date</u>	<u>Pool</u>	<u>Species Removed</u>			
		<u>Northern Pike</u>	<u>Perch</u>	<u>Bullheads</u>	<u>Suckers</u>
4-11	E-1	12	17	6	
4-11	F-1	19		5	
4-11	H-1	37		2	
4-11	J-1	8		1	
4-13	E-1	27	14	35	
4-13	F-1	18	6	200	
4-13	H-1	33		3	
4-13	I-1	2			
4-13	J-1	2		2	1
4-15	D-1	2		150	
4-15	E-1	42	50	80	
4-15	F-1	15		250	
4-15	H-1	19	2		4
4-18	E-1	47	175	700	
4-18	F-1	15	10	75	
4-18	H-1	34	5	150	4
4-18	M-2	10	4	10	5
Totals		342	283	1,669	14

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 Table 11. Plantings of Fish Taken from Refuge Pools, 1966. \*

<u>Location</u>	<u>Species</u>	<u>Number</u>	<u>Date</u>
Macaulay Pike Marsh	Northern Pike	71	4-11
Refuge Display Pools	Northern Pike	13	4-13
Macaulay Pike Marsh	Northern Pike	41	4-13
Refuge Show Pools	Northern Pike	8	4-15
Refuge Show Pools	Perch	50	4-15
Refuge Show Pools	Bullhead	250	4-15
Refuge Show Pools	Sucker	4	4-15
Macaulay Pike Marsh	Northern Pike	10	4-19
Pike Lake Pike Marsh	Northern Pike	160	4-19
Refuge Show Pools	Northern Pike	35	4-19
Refuge Show Pools	Perch	200	4-19
Refuge Show Pools	Bullhead	250	4-19
Refuge Show Pools	Sucker	3	4-19

\* Fish not stocked were returned to the refuge pools.

Mortality on the Northern Pike was very low.

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#### H. Reptiles and Amphibians

A Painted Turtle was seen on March 21 near headquarters. The first Tree Toad was observed on April 12, Eastern Garter Snake on April 14 and Snapping Turtle on April 19.

During July and August, George Martin, commercial turtle trapper from Quincy, Michigan, removed 117 Snapping Turtles. Total weight of the catch was 2,018 pounds (17 pound average). It was estimated that refuge personnel removed 25 turtles.

On July 26, an adult female Mallard Duck was seen floundering on

F-1 Pool near residence #1. Upon investigation it was found that a small Snapping Turtle (about seven pounds) had a hold on the duck's foot and was attempting to pull it under in shallow water. This duck was rescued, but the number lost to turtles is unknown.

## I. Disease

Approximately 50 goslings died of disease during May and June. Exact cause of death was not determined but Leucocytozoon, a blood parasite, and/or Aspergillosis are suspected. This figure is a little lower than 1965 and considerably lower than the 1964 loss of 500 goslings.

Each year it is noted that a few goslings become crippled and are unable to keep up with the brood. Patuxent research biologists, with refuge personnel cooperating, are continuing their investigation into this crippling disease and gosling loss. On July 7 Dr. Carlton M. Herman and his assistants collected 50 blood samples from Seney geese during the drive-trapping and banding operations. Experimental goslings provided by Dr. Herman were inoculated with the blood and the various stages of infection were studied as they developed in the birds.

On July 7 and 8 Dr. D.O. Trainer, Associate Professor of the Department of Veterinary Science of the College of Agriculture of the University of Wisconsin collected 162 blood samples. Preliminary studies show that of 150 samples tested, 16 were Newcastle disease reactors. At present the significance of this is not known. It is hoped that further studies will bear this out. A more complete report on all of the studies conducted on these blood samples is still forthcoming.

## III. REFUGE DEVELOPMENT AND MAINTENANCE

### A. Physical Development

Budget cuts and personnel ceilings are destined to produce some effect. As we look back over 1966 we can see profound results produced by these limitations.

#### 1. Island Improvement

Wave action continued to "melt" away the new man-made islands in I-1 Pool. Several man days were spent planting sedges and rushes around the base of these islands to hold the sand against erosion.

Similar work was done on the new islands at the Lower Goose Pen. They also were fertilized and seeded with grass seed to hasten

establishment of a vegetative cover. To date these islands appear to be holding up better against the wave action than those in I-1 Pool.

The 2 long low berms on the east end of the Lower Goose Pen were bulldozed to create 4 pair of new nesting islands. The point of another berm was pushed back to create a greater distance between it and one of the sets of new islands. The new islands were fertilized, seeded and mulched with hay.

## 2. Trap Site Development

The Colorado duck traps at J-1 and A-1 Pools were modified this year to leave the chicken wire ramp into the enclosure completely uncovered. Previously they had been covered with canvas overlaid with gravel. A third Colorado trap was built this year near the southwest corner of I-1 Pool. This was the most successful of the three, but none gave good results.

Several larger, modified versions of the dove trap were constructed by Maintenanceman Losey and utilized with excellent success.

## 3. Road Improvement

Boyd Construction of Germfask submitted the lowest bid for hauling the gravel from the stock pile at George Zellar's pit and spreading it on the main entrance road. The contract called for moving and spreading 900 yards of material at \$0.95 per yard. The total contract was for \$855.00.

Since there were only 870 yards of gravel in the stockpile Mr. Boyd met the contract by moving 30 yards of top soil from George Zellar's pit to cover the Germfask Dump.

Mr. Boyd was given a second contract hiring his equipment for moving an additional 595 yards of top soil from George Zellar's to the Germfask Dump. A total of 870 yards of gravel and 625 yards of top soil were moved.

The refuge staff accomplished several road improvement projects. The Chicago Farm by-pass road was completed with the installation of a culvert and additional crushed gravel top dressing. A culvert was installed at a low wet spot in the Red Pine Natural Area. Fifteen loads of gravel were spread on the Marsh Creek Road. Additional gravel was spread at the Wigwam picnic area. The road into the shop area was widened to permit 2 vehicles to meet and pass safely. A longer culvert was installed to facilitate the drainage. Widening of the entrance to the visitor center was completed and barrier posts were set. Encroaching limbs and brush along a number



of roads and trails have been scratching the vehicles using those areas. Brushing was done along the Driggs Road south of M-2 dike, also the trail into the west end of T-2 Pool and the road into T-2 spillway. The trail on the dike on the west side of A-1 was also opened up for vehicle use.

#### 4. Construction

The big task for January and February was the construction of 100 wooden woodduck nest boxes and six animal live traps. The nest boxes were put out during March and April.

Bridge guard rails were constructed at four spillway bridges. Wooden railings were installed at F to E, E to D and C to B spillways. A pipe and cable guard rail was installed at J to H spillway. Cost of construction averaged \$120.00 each.

A fence was built around the 40 acre area which has contained the Germfask dump since shortly after the refuge was established. The fencing was done in conjunction with the closing of this dump.

Two wooden boxes were designed and constructed for carrying the chain saws in trucks without presenting a SAFETY hazard and to protect them from damage.

#### 5. Landscaping and Erosion Control

An accomplishment of outstanding significance was the official closing of the Germfask dump on June 13. The many year's collection of rubble which had become a rat haven and an embarrassing eye sore was buried. The entire area was then covered with several inches of top soil and seeded to grain and grass seed. By mid-July the area was looking very respectable. The new fence and signs around the area clearly signify that this is part of the refuge. Some day we expect that this gate will be the entrance to a new picnic area along the Manistique River.

Also the area used for dumping and burning refuge refuse was renovated and tidied up. A sanitary landfill pit was dug and refuse shall be covered periodically. Also an incinerator was set up to facilitate complete burning of combustibles without blowing.

Approximately 15 acres of bare sand areas were mulched with hay to hold the sand until a sod can develop. Mulching was done along the Walsh Road, on C-3 dike, especially the west end beyond the second spillway, along the Driggs Road, the Chicago Farm Road, the Chicago Farm by-pass and the Lower Goose Pen.

## 6. Land Development and Improvement

Land development work at the Lower Goose Pen was continued this year. Nine acres of the flat area below Smith Field were cleared of driftwood and disked. Five acres were fertilized and planted to winter rye, Proso millet and grass seed to provide a grazing area for geese.

Extensive work was done on the area between the sub-headquarters field and the Lower Goose Pen. Rocks, roots and other debris were cleared from an eight acre strip which was then disked, fertilized and planted to rye, Proso millet and grass seed.

## 7. Maintenance and Replacement

### a. Dikes and Spillways

Heavy accumulations of driftwood had collected along the east dike of the Lower Goose Pen. It was creating a double problem; first by floating to and jamming the spillway and secondly by causing abrasion on the dike. The entire east shore and some distance on the south shore was cleaned up.

Temporary repairs were made on J to I spillway. Chips of concrete have flaked off the floor of the structure allowing water to escape beneath the spillboards. The leak was remedied by shaping the bottom spillboard to fit the contour of the floor but, permanent repairs are needed.

Twenty truck loads of rock rip-rap were hauled from Smith Field and lower sub-headquarters area to A-1 spillway. Erosion below the spillway was minimal this year. The additional rip-rap should put this trouble spot in good shape.

### b. Outbuildings

The central fuse box in the stone building was replaced by a circuit breaker panel, thus creating a safer electrical system in that building.

Storm windows were made for the student cabin from some windows that were on hand. The cabin with its oil space heater is ready to provide comfortable emergency shelter in event of prolonged power failure.

The stone work at the top of the chimney at the Wigwams had loosened and pranksters had dropped some of the loose stones into the chimney. As this situation was being checked out it was determined that the entire roof shelter between the two teepees is badly decayed and

needs replacing. The remaining loose stones were removed. A complete repair job is planned for the spring of 1967.

A considerable amount of time was spent manning a pump to water the visitor center and headquarters lawns as it was a dry summer. An automatic sprinkling system is badly needed to keep green attractive lawns which also serve as important goose grazing areas.

c. Residences

The outside basement doors and door frame at the sub-headquarters residence were rebuilt and painted.

d. Roads and Trails

The refuge roads and trails were graded as needed. Used oil was again applied to the entrance roads and the conducted tour route as a measure to suppress dust. One application of 3,000 gallons on the tour route was sufficient for the season. Two applications of 900 gallons each were put on the entrance roads and headquarters area.

The roadsides along the guided and the self-guided tour routes and the main entrance road were clipped in mid-summer.

e. Other

The following septic tanks were pumped out this summer by Wilfred Brown of Curtis for a total of \$165.00: the office, the outside toilet at headquarters, the visitor center, residence #136, two tanks at residence #1, the automotive shop, the log cabin, the student cabin, residence #137 and residence #7.

8. Equipment Received

Below is a listing of the equipment received during this period.

- a. New 1966 Chevrolet  $\frac{1}{2}$  ton pickup, conventional, from GSA.
- b. New 1966 International  $2\frac{1}{2}$  ton stake w/grain box, from GSA.
- c. New Hotpoint refrigerator for Residence #136, from GSA. The control on this unit was inoperable when received. It was taken to Schubring's in Manistique for repair and still hasn't been fixed.
- d. New Victor adding-subtracting machine on government contract.
- e. New 3M dry-copy machine on government contract.
- f. Used Mimaya  $2\frac{1}{4} \times 2\frac{1}{4}$  double lense reflex camera, transferred from Regional Office.



- g. Used 1962 Chevrolet 2½ ton dump truck from Kincheloe Air Force Base, Michigan.
- h. Used 1952 Dodge 3/4 ton, 4WD truck from Kincheloe Air Force Base. This unit is now being used as the fire truck.
- i. Used Clark fork-lift transferred from Shiawassee Refuge.
- j. Two used track-type motor vehicles, "Weasels", from Selfridge Air Force Base, Michigan.
- k. Two used Jigers, "marsh buggies", from Selfridge Air Force Base, Michigan.
- l. Used Hobart electric welder from Camp McCoy, Wisconsin.
- m. Used Walker-Turner woodworking band saw from Camp McCoy, Wisconsin.
- n. Used M-35, military telescope with mounting and stand from Barstow California Marine Corps Supply Center.

#### 9. Major Repair of Equipment

The Ski-Doo snowmobile was repainted and a new windshield was installed. The Austin-Western H-99 grader was given a new paint job. New tires were mounted, brake cylinders replaced and the circle reverse gear was overhauled. Also the dozer blade was modified, mounted and painted. The grain box and hoist were removed from the 1955 Dodge stake and exchanged with the flat bed on the 1956 Dodge stake. The International Travelette was repainted, given a complete engine overhaul and the brakes were overhauled. The drums were turned down and new brake linings were installed on the Chevrolet 4x4 pickup. A new gas tank was built for one of the Weasels. Also, a new fuel pump was installed and the engine and vehicle were serviced throughout. Bearings and seals were replaced in the final drive on the John Deere 420. New tires were installed and the rear brakes were repaired on the 1958 Chevrolet dump truck. The box on the 3/4 ton Dodge 4x4 Weapons Carrier was modified to accommodate the fire pumper. Also, a new generator, voltage regulator and turn signals were installed and the spare tire was mounted on top of the cab. A new master clutch assembly was installed in the TD-14 tractor and the head gasket was replaced. New bearings and seals were put in both front idlers of the John Deere 1010 and the injection pump and the track-adjusting linkage were replaced. A new clutch and oil pan were installed in the Case 500 and the front suspension mounting was repaired. The crankshaft on the Fairbanks-Morse fire pumper was turned down and the leathers were replaced. Also, the engine head was welded. The boom mounting was modified and the cable was threaded on the Bucyrus-Erie crane. The pump on the 200 gallon Dri-Bak water pumper was overhauled, new bearings and leathers were installed.

Many other repair and service jobs were also accomplished. Although they may not be classified as major they were essential to the continuance of the refuge program.

## 10. Water Wells

Two new wells were dug by Warren Saunders of McMillan. At the Driggs picnic area an adequate supply of water was reached at 28 feet. However, it tested unsafe and the well was pushed to 39 feet. At this point it pumped at 9-1/3 gallons per minute and tested safe. This well cost \$179.84. The second well was put down at the C-3 picnic area. It is 33 feet deep, pumped 9-1/3 gallons per minute and cost \$161.72. It tested safe on the first sample.

## B. Plantings

### 1. Aquatic and Marsh Plants

Clumps of sedges and rushes were taken up from the back side of the pools and planted around the base of the new islands in I-1 Pool and also at Lower Goose Pen to hold the islands against wave action erosion.

### 2. Trees and Shrubs

None this period.

### 3. Upland and Herbaceous Plants

None this period.

### 4. Cultivated Crops

Cooperative farmer Laverne Macaulay operated 233 acres again this year consisting of Conlon Field, Smith Field, Sub-headquarters and Chicago Farms.

Thirty-seven acres of oats were put in at Chicago Farm and seeded to a red clover, alfalfa and brome grass mixture. June and July were extremely dry and the oats and new seeding did poorly. Oats averaged about 18 bushel per acre at harvest. This coming spring will tell the story on how well the seeding survived. The remaining 70 acres were in hay.

At Sub-headquarters 16 acres were planted to oats and seeded to alfalfa, red clover and brome and 18 acres were planted to oats and not seeded. Both fields were planted later due to spring rains and therefore ripened later. Fall rains and wet field conditions prevented harvest all together. In mid-October ducks and geese were making good use of the area and gleaned a good percent of the ripe grain. The remaining 34 acres were in hay.

The west 20 acres of Conlon Field was worked and planted to buckwheat in late June. A rain and warm weather followed planting and

it germinated and grew well. It produced a good yield before frost killed it in early September. Macaulay harvested 15 acres in early October gaining 275 bushel. As many as 900 - 1,000 geese made good use of the field, beginning to move into it before harvesting and continuing throughout October, gleaning nearly all of the remaining grain. The east 20 acres were in hay.

The Smith Field (18 acres) was planted to winter rye in mid-July. It provided green graze for the remainder of the summer and fall. This is considered a very early planting for a winter grain. It will be significant to note spring survival and yield of grain in the forthcoming season.

All areas listed above that were planted were also fertilized with 5-20-20 at 200 pounds per acre.

The 8 acre strip on lower Smith slope was the only area of ripe rye this year. It was mowed by refuge personnel with rotary mower to knock the seed out of the heads and the area lightly disked to promote germination of some of the grain to increase green forage. The ripe grain, the new sprouts and the clover seeded last fall all provided an attraction. Geese made constant use of the Smith areas during summer and fall.

Refuge personnel operated 160 acres of peatlands on the north side of the refuge. At the Walsh Unit 15 acres of oats were put in at the south end and seeded to a mixture of alsike, ladino and brome. Crops in these muck soils suffered sorely from the drought conditions. The oats set very little grain and the seeding completely died. Approximately five acres of winter rye were planted next to the oats. The remaining 30 acres were in hay.

At the Diversion Unit 25 acres of oats were planted and seeded to alsike, ladino and brome. Most of it was planted too late and also suffered from the drought. Yield was not too significant. Better equipment is needed to operate these fields properly if satisfactory results are to be gained. Approximately 25 acres were planted to winter rye in September. The remaining 55 acres were in hay.

All peatlands that were planted were also fertilized with 6-24-24 at 200 pounds per acre.

Max Macaulay was contracted to purchase, haul and spread 234.6 tons of lime for a total cost of \$1,407.60. Fifty-one tons were spread on the two south fields at Sub-headquarters, 45.6 tons on Smith Field, 60 tons on the west half of Conlon Fields and 78 tons on the northwest field of Chicago Farm. An additional 56 tons were spread on the new ground along the east and south side of



Chicago Farm from the stock pile at Pine Creek. All applications were at the rate of 3 tons per acre.

Approximately five acres of the newly worked area below Smith Field were fertilized at 200 pounds per acre with 6-24-24 and planted to winter rye. An additional eight acres below sub-headquarters field were fertilized at about 350 pounds per acre with 6-24-24 and planted to winter rye.

#### C. Collections and Receipts

##### 1. Seed and other propagules

A total of 837 bushel of shelled corn and 115 bushel of ear corn were received from Shiawassee Refuge, to be used to feed the geese during the early spring and as bait for trapping operations.

Forty bushel of buckwheat were received from Necedah Refuge to be used as seed for planting.

##### 2. Specimens

Several specimens were found dead or taken during regular trapping operations and were used for scientific study or saved for exhibit purposes. The list includes one Mallard, four Blue-winged Teal, two Woodducks, six Canada Geese, one Ruffed Grouse, one Barred Owl, one Common Raven, three Red Crossbills, one White-crowned Sparrow, one Song Sparrow, one Yellow Warbler and one Robin.

#### D. Control of Vegetation

The main effort was directed against tag alder again this year. During January and February the safe goose-nesting islands in Unit I were brushed. During the summer the dense tangle at the Lower Goose Pen below sub-headquarters field was the main target. A total of 25 acres were cleared during 31.5 man days through September. In December five man days were spent clearing approximately five acres along Driggs Road, T-2 Road and A-1 dike.

#### E. Planned Burning

None this period.

#### F. Fires

##### 1. Statistical Fires

Three fires occurred on the refuge this period requiring concentrated effort by the refuge staff for suppression.

On April 27 high winds pushed a tree against the power lines along highway M-77 just south of the refuge entrance in Section 21, T45N, R13W. Resulting sparks ignited the ground cover. A total of two acres were burned requiring 16.8 man hours to suppress at a cost of \$53.63.

The drought condition which reached a climax in late July created a widespread fire-hazard condition in this region. On July 19th the Michigan Department of Conservation aircraft reported a fire on the refuge, two days after a severe electrical storm. The fire was located on the back side of M-2 Pool in Section 36, T45N, R14W. A total of 11.5 acres were burned requiring 113.6 man hours to suppress at a cost of \$364.15.

As the crew was coming off the M-2 fire smoke was seen to the southwest. Upon checking, the fire was located along the Driggs Road 2½ miles south of M-2 dike in Section 13, T44N, R14W. It was quickly brought under control. A total of 1.7 acres were burned, requiring 76.8 man hours to suppress at a cost of \$371.41.

Mop up took 54%, 91% and 96% respectively of the total effort. All smokes were put completely out because of the high fire danger.

There was no serious timber loss in any of these fires.

Refuge personnel were involved in two other fires. On May 9 a fire broke out at the Germfask Dump located on refuge property in Section 9, T44N, R13W. The Germfask Township fire truck was summoned to suppress the fire. Mechanic Orlich was passing by and assisted in the effort. The fire was confined to the dump area.

On April 12 the refuge was called by the Michigan Department of Conservation, in accordance with the cooperative fire protection agreement, to assist with a fire south of Germfask near the Kerry Burns farm in Section 15, T44N, R13W. Forester Milligan and Mechanic Orlich were dispatched with the fire pumper. It was a grass fire which was quickly suppressed.

Another fire occurred this period, the details of which are unknown. In August 378 bales of hay were stacked on the dike at Marsh Creek and were to be spread on the bare sand areas at a later date. There had been abundant rainfall throughout the fall and fire danger was low. Nevertheless, the stack was completely burned when the permittee trapper checked that area on November 26. Refuge personnel had been in that area only a week earlier and the trapper reported the stack was there just four days prior. On November 24 a severe electrical storm with heavy rain moved through that area, but there also were three or four deer hunting parties in that vicinity. Whether it was an act of vandalism or an act of Nature will remain a mystery.

## 2. Protection

The Fire Protection Plan was updated including a revision of the duty roster.

Additional fire suppression tools and equipment were acquired for the fire cache and fire boxes to meet the needs outlined in the Fire Protection Plan.

The cooperative fire protection agreement between the Bureau of Sport Fisheries and Wildlife, Seney National Wildlife Refuge and the Michigan Department of Conservation was renewed again this year.

## 3. Fire Weather

Except for a two month period in mid-summer the fire danger remained generally low. Fire danger records were maintained from April 16 through October 31 and portray the following:

<u>Fire Danger</u>	<u>Days</u>	<u>Spread Index</u>
Low	98	0-4
Moderate	35	5-9
High	42	10-19
Very High	8	20-39
Extreme	0	40-100

Ground cover became brown and very dry during July. It was fortunate that there weren't more fires as there were several thunderstorms with "hot" lightning strikes. A point of strike and small burn was observed later along the Diversion Ditch. Obviously the accompanying heavy rain quenched the fire.

## IV. RESOURCE MANAGEMENT

### A. Grazing

None this period.

### B. Haying

Hay is an important crop in the rotation program at Seney. The second growth provides good green forage for the geese in late summer and fall.

The cooperative farmer harvested 124 acres of hay. The yield was lower than expected because of the dry weather. However, it was better than in 1965. A breakdown is listed on the following page.



<u>Farm Unit</u>	<u>Acres</u>	<u>Tons</u>	<u>Tons Per Acre</u>
Conlon	20	40.3	2.0
Sub-headquarters	34	68	2.0
Chicago Farm	70	114.6	1.6
Totals	124	222.9	1.8 Average

The refuge share of 9.5 tons was taken from Chicago Farm and stacked on the Marsh Creek dike to be used for mulch at a later date. This stack was mysteriously burned late in November (see Statistical Fires section).

There were 85 acres of hay at the Diversion and Walsh Units. At Walsh 20 acres were cut and taken off loose by the refuge staff. It yielded approximately 11 tons, averaging 0.55 ton per acre, and was spread as mulch along the Walsh Road. Ten acres of new clover seeding were too light to be worth cutting.

The refuge staff cut and raked the 55 acres of hay at the Diversion Unit. Jay Livermore of Germfask baled it for 40% of the crop. The total yield was 84.2 tons, averaging 1.53 ton per acre. The refuge share, 50.5 tons, was used to mulch sand blows on C-3 dike and along Driggs Road.

#### C. Fur Harvest

A formal fur harvest program was not conducted this year. However, an intensive animal control program was carried out. One permittee trapper, the Division of Wildlife Services and the refuge staff all participated in the program. In April Norm Johnson and Dick Smith of the Division of Wildlife Services spent a week at Seney instructing refuge personnel and setting steel traps for coyote. The refuge staff set out live traps for raccoon and maintained the trap lines throughout the summer.

In July Cameron Coe of Manistique was issued a permit for taking raccoon and coyote on the refuge. He was allowed to keep 100% of his catch. Later in the season it was determined that mink numbers should be reduced as they were responsible for several duck losses during trapping and banding operations. Mr. Coe was issued another permit on October 25 for taking mink on a 50-50 percentage basis.

A total of 60 muskrats, 36 mink, 7 striped skunks, 56 raccoons, 28 coyotes, 6 bobcats, 1 red fox and 8 porcupine were removed as a result of all trapping efforts.

#### D. Timber Removal

Forester Roy Milligan transferred to Iroquois Job Corps Conservation

Center on June 1. Consequently, forestry activities have come virtually to a standstill.

Prior to leaving Roy laid out three timber sales. One of these was put up for public bid. It was approximately a 40 acre area in Section 8, T44N, R13W containing primarily mature white birch and trembling aspen. It was estimated to contain 347 cords.

Mr. Harold Peters of Germfask was the successful bidder offering a bid of \$504.55. Mr. Peters was given until October 31 to complete the project, but due to weather conditions was unable to do so. His permit was extended until April 30, 1967.

Cutting this area will release the balsam fir presently coming as an understory. There also will be regeneration of birch and aspen through root suckering providing both good wildlife habitat and a valuable forest for the future.

Another sale which could be announced at any time is the mature Jack Pine area south of the Driggs River Picnic Area. The third area is along the south side of the Manistique River between the Natural Area and County Road 436. This sale would consist of removing only the timber necessary for the construction of a loop road and development of several picnic sites and a boat launching ramp.

#### E. Commercial Fishing

None at this refuge.

#### F. Other Uses

Mr. George Martin of Quincy, Michigan was issued a Special Use Permit for trapping snapping turtles on the refuge. Government receipts for this activity amounted to \$20.00 on the basis of \$1.00 per trap used. Mr. Martin trapped from July 12 until August 20 catching 117 turtles totalling 2,018 pounds.

Mr. William Linne, Shingleton, Michigan was granted a Special Use Permit to load forest products at the Driggs railroad siding (Spur 88) from May 1 to July 30. Under this permit 11 cars of pulpwood were loaded. This is equivalent to 44 truck loads.

Mr. Stanley Tyner of Shingleton, Michigan was granted a Special Use Permit to load forest products at the Walsh railroad siding (Spur 91) from November 17 to December 31. Mr. Tyner was loading out chemical wood, but failed to report the volume of material shipped.

Mr. James Joslin, student from Michigan State University, was

issued a free use permit from August 17 until September 5 for the purpose of conducting a preliminary survey of the refuge. Mr. Joslin was searching for a suitable zoological PhD research study project. No positive decisions had been made by the time he left.

#### V. FIELD INVESTIGATION OR APPLIES RESEARCH

##### A. Waterfowl Disease Study (Leucocytozoon)

Dr. James Barrow of Hiram College, Ohio completed five years of data gathering in September of 1963. To date no publication or completion report has been received from

##### B. Blackfly Study

Dr. Carlton M. Herman of the Patuxent Wildlife Research Center has been supervising this study. He made a trip to Seney in July and obtained blood samples from several Canada Geese during the summer molt drive-trapping program. This is aimed at the blood diseases Plasmodium and Leucocytozoon, but deals primarily with the vector of the disease. Dr. I. Barry Tarshis of Patuxent was the field investigator in 1966. Through him Patuxent is trying to determine which species is the vector and how it may be controlled. Dr. Tarshis made two trips to Seney to study blackflies and to collect eggs and larvae<sup>for</sup> propagation under laboratory conditions at Patuxent.

This is the fourth consecutive year of Patuxent's study on the blackfly.

##### C. Land Use Planning

In 1965 an intensive inventory of Seney's habitat types was initiated by the refuge forester. This inventory was continued in 1966 until the forester transferred on June 1. The program will be resumed when a new forester arrives. A land use plan will be prepared when the inventory is complete.

##### D. Pesticide Study

On April 12 Richard L. Moore and Carl E. Carlson from the U.S. Department of Agriculture, Division of Plant Pest Control established permanent study plots in the Red Pine Natural area, Section 11, T44N, R14W, for the purpose of pesticide study and surveillance. Fifty soil core samples will be taken annually from each of ten one-acre plots and analyzed for pesticide accumulation and retention and checked against studies made in areas from known contamination.

##### E. Student Assistant Projects

Each college student, whether working as Wildlife Aid or Laborer, was assigned a field research project. The projects are listed on page 49 and each completion report is on file at Seney Refuge.



## VI. PUBLIC RELATIONS

### A. Recreational Uses

Visitor use increased markedly over last year. Local merchants agree that this was one of the busiest summers they have had in several years. There is little doubt but what the hot summer influenced many vacationers to come over the "Mac" Bridge and into Upper Michigan.

Although it was a busy visitor season only a very small percentage of the traffic stops at the refuge. It is felt that expanding publicity has brought an awareness of the refuge to many. As publicity is intensified visitation will increase. News releases and announcements in travel guides are now common place. This past October WXYZ - TV in Detroit gave Seney Refuge special coverage on their Michigan Sportsman program. This type of publicity is bound to produce results.

This year, for the first time, Seney Refuge was designated a fee area under the Land and Water Conservation Fund Act. Federal Recreation Area Permits were required for the self-guided and the conducted tours. All other areas and facilities were open to the public on the same basis as in the past. However, an intense effort was made to inform the public of the new program through literature, posters and personal contacts.

The self-guided auto tour leaflet was revised again and 5,000 copies were printed by the Pioneer Tribune printers in Manistique for a cost of \$202.20. This eight page, accordian fold, 11½ x 19 inch leaflet is too large, however, and should be made smaller on the next printing.

The Public Facilities leaflet was also revised and updated. It was reproduced at the Regional Office.

All remaining exhibits for the Visitor Center exhibit room were completed and received on June 18. This included two floor exhibits, four photos, each framed with a conservation quotation, replacement of the Refuges exhibit and the Flyway exhibit and a title for the Duck Stamp drawings exhibit.

In spite of the heavier use around headquarters the tour use was down this year. There were 963 cars and 3,413 visitors over the self-guided trail this year as compared to 1,083 cars and 4,283 visitors last year. The participation in the 6:00 P.M. conducted tour included more cars, but fewer persons than 1965. There were 795 cars and 3,310 persons this year as compared to 784 cars and 3,423 passengers a year ago.

Total sales of Federal Recreation Area Permits, required for the tours, amounted to \$1,727.00. There were 38 Golden Eagle annual permits sold for \$266.00, 1,451 one dollar daily permits for \$1,451.00 and 20 fifty cent daily permits for \$10.00.

The areas of the greatest increase in use were the picnic areas. There were 17,116 picnickers recorded for this year as compared to 11,432 in 1965.

Seney continues to attract the high quality visitor, those interested in seeing wildlife and enjoying the scenery and the great out-of-doors. Littering is almost nonexistent throughout the summer. It doesn't become a problem until the deer hunters come in. There is a high frequency of inconsiderate, disrespectful, self-centered individuals among this group.

Vandalism was only a minor problem again this year. There are only two incidents to report. On May 9 the mail box was found damaged, the result of a fire-cracker exploding in it. The box was repaired. The second incident occurred at the Wigwam picnic shelter where some of the stones were loosened from the top of the chimney and dropped into the chimney. It is believed that local pranksters were responsible for both incidents.

Fishing use was down from 5,832 in 1965 to 3,828 in 1966. Winter use is very light being less than 50 use-days. Summer fishing is fair when the pools are first opened, but falls off sharply and does not present a steady attraction to anglers. The hot summer reduced fishing success generally.

#### B. Refuge Visitors

Official refuge visitors are listed on pages 34 through 37.

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
01-13-66	Richard N. Smith, Supervisor	Columbus, Ohio	Division of Wildlife Services
01-13-66	Richard S. Wetzel	Columbus, Ohio	Division of Wildlife Services
01-20-66	Ralph E. Bailey, Regional Biologist	Marquette, Michigan	Michigan Department of Conservation
01-25-66	Larry Hough, Field Aid	Manistique, Michigan	U.S. Geological Survey
01-25-66	John Oberg, Field Aid	Escanaba, Michigan	U.S. Geological Survey
02-02-66	Michael Zudiema, Forester	Munising, Michigan	U.S. Forest Service
03-01-66	John Winship, Pilot-Biologist	Minneapolis, Minnesota	Fish and Wildlife Service
03-02-66	Frank Martin, Ass't Regional Supv.	Minneapolis, Minnesota	Fish and Wildlife Service
03-02-66	Robert Barr, Trooper	Manistique, Michigan	Michigan State Police
03-02-66	Leland Anderson, Biologist	Newberry, Michigan	Michigan Department of Conservation
03-03-66	Stanley Baldwin, Field Aid	E. Lansing, Michigan	U.S. Weather Bureau
03-08-66	William Fuchs, State Supervisor, GMA	Lansing, Michigan	Fish and Wildlife Service
03-08-66	R.C. Chase, District Ranger	Rapid River, Michigan	U.S. Forest Service
03-10-66	E.J. Sundstrom, Editor	Sault Ste. Marie, Mich.	Soo Evening News
03-18-66	Emil Wrise	Lakefield, Minnesota	Minnesota Conservation Federation
03-22-66	Gerald Falls, GSA, UDS Officer	Detroit, Michigan	General Services Administration
03-30-66	John Oberg, Field Aid	Escanaba, Michigan	U.S. Geological Survey
03-30-66	Charlie Doonan	Escanaba, Michigan	U.S. Geological Survey
04-08-66	Glen Young	Marquette, Michigan	Michigan Department of Conservation
04-11-66	Oscar Jasmin	Thompson, Michigan	Michigan Department of Conservation
04-11-66	Carl E. Carlson, PPC Inspector	Kalamazoo, Michigan	U.S. Department of Agriculture
04-11-66	Richard L. Moore, PPC Inspector	Lansing, Michigan	U.S. Department of Agriculture
04-15-66	Cecil Rhodes	Cooper Landing, Alaska	Wildlife Photographer & Lecturer
04-21-66	Butch Manita	Munising, Michigan	U.S. Forest Service
04-21-66	Bruno Lundfos	Munising, Michigan	U.S. Forest Service
04-25-66	Sergej Postupalsky	Royal Oak, Michigan	Detroit Audubon Society
05-06-66	Charlie Doonan	Escanaba, Michigan	U.S. Geological Survey
05-06-66	Gordon C. Hulbert	Escanaba, Michigan	U.S. Geological Survey
05-09-66	Roger Howell, SCS	Manistique, Michigan	U.S. Department of Agriculture
05-09-66	C.N. Powell, Trooper	Newberry, Michigan	Michigan State Police
05-10-66	Charles Varty, Maintenance	Elmira, Michigan	Jordan River Nat'l Fish Hatchery
05-10-66	Lloyd F. Stark, Fish Hatcheryman	Alba, Michigan	Jordan River Nat'l Fish Hatchery
05-10-66	Paul Schnell	Mancelona, Michigan	Jordan River Nat'l Fish Hatchery
05-11-66	Ed Mikula, Waterfowl Specialist	Lansing, Michigan	Michigan Department of Conservation
05-18-66	Roger Howell, SCS	Manistique, Michigan	U.S. Department of Agriculture



<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
05-18-66	Charles M. Smith, Biologist, SCS	E. Lansing, Michigan	U.S. Department of Agriculture
05-20-66	Richard M. Kocan	E. Lansing, Michigan	Michigan State University
05-23-66	Robert Reynolds	Sault Ste. Marie, Mich.	Federal Bureau of Investigation
05-26-66	Owen L. Jamison, Regional Supv.	Milwaukee, Wisconsin	U.S. Forest Service
05-26-66	Johnny Trotter, District Supv.	Escanaba, Michigan	U.S. Forest Service
05-27-66	Archibald B. Cowan	Ann Arbor, Michigan	University of Michigan
05-27-66	Douglas C. Allen	Ann Arbor, Michigan	University of Michigan
05-27-66	Fred Knight	Ann Arbor, Michigan	University of Michigan
05-31-66	Elwood E. Carl	AuTrain, Michigan	AuTrain Elementary School
06-01-66	Delbert Guneister, SCS	Marquette, Michigan	U.S. Department of Agriculture
06-01-66	Roger Howell, SCS	Manistique, Michigan	U.S. Department of Agriculture
06-02-66	John Erickson, Sanitation Engineer	Escanaba, Michigan	Michigan Dept. of Public Health
06-02-66	Boyd Briggs, Sanitation Engineer	Manistique, Michigan	Alger-Schoolcraft Health Dept.
06-03-66	John Oberg, Field Aid	Escanaba, Michigan	U.S. Geological Survey
06-09-66	C.N. Powell, Trooper	Newberry, Michigan	Michigan State Police
06-15-66	C. Haranda, Trooper	Manistique, Michigan	Michigan State Police
06-15-66	Fred Steks, Engineer	E. Lansing, Michigan	Michigan State University
06-20-66	V.F. Hendricks	Chicago, Illinois	U.S. Weather Bureau
06-22-66	Robert Ball	Seney, Michigan	Michigan Department of Conservation
06-23-66	Ed Veilich	Buffalo, N.Y.	Buffalo Ornithological Society
06-23-66	William Wallace, Forester	Manistique, Michigan	Michigan Department of Conservation
06-23-66	Marcus Burnis, Forester Technician	Germfask, Michigan	Michigan Department of Conservation
06-29-66	Dr. James H. Barrow	Hiram, Ohio	Hiram College
06-29-66	John C. Davis	Pellston, Michigan	University of Michigan
07-06-66	Sergej Postulpasky	Royal Oak, Michigan	Detroit Audubon Society
07-06-66	Larry Hough, Field Aid	Manistique, Michigan	U.S. Geological Survey
07-06-66	Larry Haack, Staff Forester	Escanaba, Michigan	U.S. Forest Service
07-06-66	Bernard M. Slick, Land Arch.	Milwaukee, Wisconsin	U.S. Forest Service
07-06-66	Edward Stone, Land Arch.	Washington, D.C.	U.S. Forest Service
07-06-66	Dr. D.O. Trainer	Madison, Wisconsin	University of Wisconsin
07-06-66	Milt Friend	Madison, Wisconsin	University of Wisconsin
07-07-66	Dr. Carlton M. Herman	Laurel, Maryland	Patuxent Research Center
07-11-66	William L. French, Staff Specialist	Newburyport, Mass.	Region 5, Fish and Wildlife Service
07-14-66	Juiebrael Chubb	E. Lansing, Michigan	Michigan State University
07-22-66	E.D. Mason	Charlevoix, Michigan	Charlevoix, Fish Hatchery

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
07-22-66	Charles I. Varty	Elmira, Michigan	Jordan River Nat'l Fish Hatchery
07-28-66	Eugene W. Braschler	Minneapolis, Minnesota	Division of Fish Hatcheries
07-31-66	Harry W. Rice, Ass't Director	Falls Church, Virginia	Bureau of Outdoor Recreation
07-31-66	John G. Tkach, Chief, Special Area Studies	Annandale, Virginia	Bureau of Outdoor Recreation
07-31-66	Robert H. Myers, Ass't Regional Director	Ann Arbor, Michigan	Bureau of Outdoor Recreation
07-31-66	Jerry Chiappetta, Photographer-	Detroit, Michigan	Michigan Sportsman, WXYZ-TV
07-31-66	Gene Little	Detroit, Michigan	Michigan Sportsman, WXYZ-TV
08-04-66	Robert Sisson, Photographer	Washington, D.C.	National Geographic Magazine
08-11-66	Stanley Baldwin, Field Aid	Lansing, Michigan	U.S. Weather Bureau
08-12-66	James Joslin, Phd. student	Lansing, Michigan	Michigan State University
08-12-66	G.D. Petz	Escanaba, Michigan	Michigan Department of State Hwys.
08-13-66	Dave McGlauchlin, Manager	Coleharbor, N.D.	Snake Creek Nat'l Wildlife Refuge
08-16-66	John G. Harrison	Toledo, Ohio	Ducks Unlimited
08-16-66	Michael Zuidema, Forester	AuTrain, Michigan	U.S. Forest Service
08-16-66	R. Pakila, Forestry Aid	Munising, Michigan	U.S. Forest Service
08-16-66	John R. Gustafson, Forestry Aid	Munising, Michigan	U.S. Forest Service
08-19-66	Shirl Gast	Little Falls, Minn.	VISTA
08-19-66	Karen Keyser	Salinas, California	VISTA
08-29-66	Newman H. Bergh, District Forester	Newberry, Michigan	Michigan State Highway Dept.
09-07-66	Robert Henning, Aid	Waupin, Wisconsin	Horicon National Wildlife Refuge
09-13-66	T.W. Reed, Chief, Branch Design & Const.	Washington, D.C.	Div. of Engineering, U.S.F.W.S.
09-13-66	Ray Jensen, Supv., Branch of Design	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
09-16-66	Eugene Coulson, Con. Officer	Allegan, Michigan	Michigan Department of Conservation
09-16-66	David A. Watts	Valley Church, Va.	Solicitors Office, U.S.F.W.S.
09-20-66	William Aultfather, Regional Forester	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
09-20-66	James Mayle, Operator, General	Saginaw, Michigan	Shiawassee Nat'l Wildlife Refuge
09-23-66	William R. Freeman	Lansing, Michigan	Michigan Audubon Society
09-23-66	Mrs. Wm. R. Freeman	Lansing, Michigan	Michigan Audubon Society
09-23-66	Mrs. G.H. Bernard	Harbor Springs, Mich.	Michigan Audubon Society
09-27-66	Thomas J.H. Bonde	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
09-27-66	Ralph E. Bailey, Regional Game Biologist	Marquette, Michigan	Michigan Department of Conservation
09-28-66	Richard Wetzel	Lansing, Michigan	Division of Wildlife Services
10-11-66	Matt J. Weber, Supt.	Manistique, Michigan	Schoolcraft County Road Commission
10-13-66	John Oberg, Engineer	Escanaba, Michigan	U.S. Geological Survey
10-13-66	Ray Salo, Game Biologist	Manistique, Michigan	Michigan Department of Conservation

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
10-31-66	Carl Sundstrum, Editor	Sault Ste. Marie, Mich.	Soo Evening News
11-01-66	Clair Rollings, Staff Specialist	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
11-02-66	Frank Martin, Ass't Refuge Supervisor	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
11-02-66	John Jones, Dept. SAFETY Officer	Washington, D.C.	U.S. Fish and Wildlife Service
11-02-66	Walter Edelman, Job Corp Training Officer	Washington, D.C.	U.S. Fish and Wildlife Service
11-08-66	Larry Ruch, Wetlands Specialist	Lansing, Michigan	Michigan Department of Conservation
11-16-66	Jack Zellner, Forester Aid	Shingleton, Michigan	Michigan Department of Conservation
11-30-66	Marcus Burnis, Forester Technician	Germfask, Michigan	Michigan Department of Conservation
11-30-66	Les Dundas, Staff Specialist	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
12-07-66	Reginald A. Moll	Bruce Crossing, Michigan	Former staff member - C.S. Johnson
12-08-66	Matthias A. Kerschbaum, Ass't Manager	Saginaw, Michigan	Shiawassee National Wildlife Refuge
12-13-66	Roger Howell	Manistique, Michigan	Soil Conservation Service
12-14-66	Dean Rhoads, County Extension Agent	Manistique, Michigan	Michigan State Extension Service
12-19-66	Rex Beadle, Radio Engineer	Newberry, Michigan	Michigan Department of Conservation

#### FREQUENT VISITORS TO REFUGE DURING 1966

Lloyd C. Lindvall, GMA	Manistique, Michigan	U.S. Fish and Wildlife Service
Richard C. Branzell, GMA	Escanaba, Michigan	U.S. Fish and Wildlife Service
Leslie Walstrom, Conservation Officer	Curtis, Michigan	Michigan Department of Conservation
Walt Niemi, Fire Officer	Seney, Michigan	Michigan Department of Conservation
John Mattson, Fire Officer	Grand Marais, Michigan	Michigan Department of Conservation
Loyd Schemenauer, Game Biologist	Newberry, Michigan	Michigan Department of Conservation
Leland Anderson, Fishery Biologist	Newberry, Michigan	Michigan Department of Conservation
Dr. I. Barry Tarshis, Parasitologist	Laurel, Maryland	U.S. Fish and Wildlife Service
Cameron N. Coe, Trapper	Manistique, Michigan	Trapping Predators
George Martin, Trapper	Quincy, Michigan	Trapping Snapping Turtles
Harvey Saunders, <u>Retired (Deceased)</u>	Germfask, Michigan	U.S. Fish and Wildlife Service

### C. Refuge Participation

Following is a list of public contacts, conferences, etc.

<u>Date</u>	<u>Group Title</u>	<u>No. in Party</u>	<u>Personnel Involved</u>
01-11-66	Farmer's Meeting on new uses of fertilizer and soil testing, Engadine, Michigan -- Off Refuge	27	Halladay
01-24-66	Regional Conference, Minneapolis, Minnesota -- Off Refuge		Hakala Halladay Updike Milligan
02-07-66	Michigan-Wisconsin Timber Producers Association "Logging SAFETY", Engadine, Michigan -- Off Refuge	20	Milligan Orlich Losey
02-09-66	Michigan-Wisconsin Timber Producers Association "Logging SAFETY", Engadine, Michigan -- Off Refuge (Care for Injured)	30	Milligan Orlich Losey
02-09-66	Isle Royal Natural History Association at Houghton, Michigan -- Off Refuge	75	Hakala
02-10-66	Upper Peninsula Law Enforcement Meeting, Ishpeming, Michigan -- Off Refuge	100	Hakala
02-14-66	Michigan-Wisconsin Timber Producers Association "Logging SAFETY", Engadine, Michigan -- Off Refuge	25	Milligan Losey
02-14-66	Seminar, University of Michigan, Ann Arbor, Michigan -- Off Refuge	25	Hakala Frye
02-15-66	Student Interviews, University of Michigan, Ann Arbor, Michigan -- Off Refuge	12	Hakala Frye
02-15-66	Seminar, Michigan State University, East Lansing, Michigan -- Off Refuge	20	Hakala Frye
02-16-66	Student Interviews, Michigan State University, East Lansing, Michigan -- Off Refuge	25	Hakala Frye



<u>Date</u>	<u>Group Title</u>	<u>No. in Party</u>	<u>Personnel Involved</u>
02-16-66	Michigan-Wisconsin Timber Producers Association "Logging SAFETY", Engadine, Michigan -- Off Refuge (Compensation)	30	Milligan Losey
02-16-66	Soil Conservation Service meeting on Conservation, Germfask, Michigan -- Off Refuge	15	Halladay Updike
03-02-66	First Aid Class, Seney Refuge Michigan State Police instructor -- On Refuge -- Staff	11	Trooper Barr
03-09-66	First Aid Class, Seney Refuge Michigan State Police instructor -- On Refuge -- Staff	8	Trooper Gerber
03-10-66	Radiological Monitoring Class, Newberry, Michigan -- Off Refuge Staff	30	Wayne Maki
03-16-66	First Aid Class, Seney Refuge Michigan State Police instructor -- On Refuge -- Staff	8	Trooper Gerber
03-17-66	Radiological Monitoring Class, Newberry, Michigan -- Off Refuge Staff	30	Wayne Maki
03-21-66	Newberry High School Biology Class, Newberry, Michigan -- On Refuge	21	Halladay
03-21-66	Engadine High School Biology Class, Engadine, Michigan -- On Refuge	11	Halladay
03-21-66	Germfask, P.T.A. Meeting, Germfask, Michigan -- Off Refuge	24	Halladay
03-22-66	Manistique Public Schools, 6th Grade, Manistique, Michigan -- On Refuge	65	Halladay
03-23-66	Lincoln School, 4 & 5th Grades -- Manistique, Michigan -- On Refuge	49	Halladay
03-23-66	First Aid Class, Seney Refuge Michigan State Police instructors -- On Refuge -- Staff	13	Trooper Barr and Gerber

<u>Date</u>	<u>Group Title</u>	<u>No. in Party</u>	<u>Personnel Involved</u>
03-24-66	Mueller Elementary School, tour of area, Gulliver, Michigan -- On Refuge	45	Halladay
03-24-66	Lincoln School, 5 & 6th Grades -- Manistique, Michigan -- On Refuge	60	Halladay
03-24-66	Radiological Monitoring Class, Newberry, Michigan -- Off Refuge Staff	30	Wayne Maki Maurice Masich
03-25-66	Doyle Township School, tour of area, Gulliver, Michigan -- On Refuge	65	Halladay
03-25-66	Fairview Township School, tour of area, Manistique, Michigan -- On Refuge	140	Halladay
03-28-66	First Aid Class, Seney Refuge Michigan State Police instructor -- On Refuge -- Staff	8	Troopers Barr and Gerber
03-30-66	Natural Resources Managers Meeting, District 4, Michigan Department of Conservation, Hulbert, Michigan -- Off Refuge (Talk on Goose Management)	17	Hakala
03-31-66	Radiological Monitoring Class, Newberry, Michigan -- Off Refuge -- Staff	30	Wayne Maki Maurice Masich
05-06-66	Ecology Class From Northern Michigan University, Marquette, Michigan -- On Refuge	60	Halladay
05-07-66	Rotary Convention Ladies, Manistique, Michigan -- On Refuge	14	Hakala Doran
05-14-66	Marquette Audubon Society, Marquette, Michigan -- On Refuge	10	Halladay
05-18-66	Rock High School, Biology Class, Rock, Michigan -- On Refuge	30	Halladay
05-19-66	Engadine High School Biology Class, Engadine, Michigan -- On Refuge	15	Halladay

<u>Date</u>	<u>Group Title</u>	<u>No. in Party</u>	<u>Personnel Involved</u>
05-20-66	Grand Marais High School, tour of area, Grand Marais, Michigan -- On Refuge	30	Halladay
06-04-66	Soo Naturalist Club, talk and tour of area, Sault Ste. Marie, Michigan -- On Refuge	7	Halladay
06-09-66	Lincoln School for retarded children, Kent County, Grand Rapids, Michigan -- On Refuge	40	Halladay
06-14- 15-66	Second Annual Michigan Canada Goose Seminar, Seney Refuge -- On Refuge	35	Hakala Halladay Updike
06-16-66	Methodist Ladies Aid Club, Germfask, Michigan -- Off Refuge	35	Mrs. Hakala
06-16-66	Schoolcraft County Township Boards Germfask, Michigan -- Off Refuge	25	Hakala
06-17-66	Michigan Department of Conservation Law Enforcement Meeting, District 4 -- Newberry, Michigan -- Off Refuge	40	Hakala
06-29-66	Resource Managers Meeting of Eastern Upper Peninsula -- On Refuge	16	Hakala Halladay Updike
07-01-66	Manistique Public Schools, Science Class, Manistique, Michigan -- On Refuge	21	Halladay
07-14-66	Michigan State Foresters, Michigan State University - Students - East Lansing, Michigan -- On Refuge	41	Hakala
07-20-66	Piatt Lake Bible Camp, Eckerman, Michigan -- Off Refuge	66	Halladay
07-21-66	Piatt Lake Bible Camp, Eckerman, Michigan -- Off Refuge	17	Halladay
07-21-66	University of Michigan Wildlife Students, Ann Arbor, Michigan -- On Refuge	9	Hakala Halladay Updike

<u>Date</u>	<u>Group Title</u>	<u>No. in Party</u>	<u>Personnel Involved</u>
07-22-66	4-H Group from Camp Shaw, Chatham, Michigan - talk and tour of area -- On Refuge	160	Halladay Updike
07-27-66	Soil Conservation Meeting, Curtis Township Hall, Curtis, Michigan -- Off Refuge	35	Hakala
07-29-66	Newberry Elementary School, Special Education, Newberry, Michigan -- On Refuge	115	Halladay
08-06-66	Illinois State Normal University Conservation Class, Normal, Illinois - On Refuge	35	Studinski
08-06-66	Bay-De-Noc Community College Conservation Class, Escanaba, Michigan -- On Refuge	11	Halladay
08-08-66	Conservation Class, Western Michigan University, Kalamazoo, Michigan -- On Refuge	9	Halladay
08-18-66	Michigan Conservation Department Law Enforcement Meeting at Nature Center and tour -- On Refuge	46	Hakala Halladay Updike
09-08-66	Bureau Project Leaders Meeting, Higgins Lake, Michigan -- Off Refuge	10	Halladay Updike
09-19-66	Michigan State University Park Administration Class, East Lansing, Michigan -- On Refuge	15	Halladay
09-19-66	Great Lakes Deer Conference, Munising, Michigan -- Off Refuge -- Michigan Department of Conservation	45	Hakala
09-20-66	Great Lakes Deer Conference, Munising, Michigan - Michigan Department of Conservation -- Off Refuge -- Mgr. Hakala presented program on Kenai National Moose Range Moose Herd	47	Hakala Halladay Updike
09-21-66	Great Lakes Deer Conference, Munising, Michigan - Michigan Department of Conservation -- Off Refuge	45	Hakala Halladay



<u>Date</u>	<u>Group Title</u>	<u>No. in Party</u>	<u>Personnel Involved</u>
09-22-66	Marquette High School, Wildlife Conservation Class, Marquette, Michigan -- On Refuge	50	Halladay
09-28-66	Resource Managers Meeting, Michigan Department of Conservation, Thompson, Michigan -- Off Refuge	30	Hakala Halladay Udike
10-05-66	Oklahoma Ornithological Society -- Group touring the country -- On Refuge	55	Halladay
10-07-66	Meeting on Deer Age Determination, Michigan Department of Conservation, Cusino Experiment Station, Shingleton, Michigan -- Off Refuge	22	Hakala Halladay Udike
10-17-66	Germfask P.T.A. Meeting, Germfask, Michigan - discussion on "Preparing the Child for High School and College" Off Refuge	24	Doran
10-25-66	Senior Citizens Group, Manistique, Michigan -- Slide show and talk -- Off Refuge	25	Hakala
11-10-66	Enforcement Meeting, Refuge Staff -- On Refuge	10	Hakala GMA Branzell
12-06-66	Michigan Technological Forester Club, Michigan Technological University, Houghton, Michigan - Mgr. Hakala gave slide show and talk -- Off Refuge	250	Hakala

#### D. Hunting

Upland game and goose hunting seasons opened on October 1 in Upper Michigan. Ruffed Grouse populations was generally down with localized areas of higher numbers making hunting spotty.

Sharp-tailed Grouse numbers were about the same as a year ago to slightly higher. Hunting was fair considering the status of the flock. Woodcock populations and hunting success were normal. Very little hunting pressure is brought against them in this area.

Legal goose hunting was very limited this year as an area on the north, east and south sides was completely closed to the taking of geese. The closure was recommended by the refuge staff, agreed with by the Michigan Department of Conservation and approved by

the Michigan Conservation Commission. The purpose of the closure is to give the local flock this added SAFETY in order that flock numbers can increase. For several years the flock has been declining. There were only 450 to 500 birds that returned in the spring of 1966. The area closed to goose hunting is all of the area within the following boundary: Starting at the junction of M-28 and the Creighton truck trail in Section 36, T46N, R16W; south on the Creighton truck trail to its junction with the Highwater truck trail in Section 17, T44N, R15W; southeasterly on the Highwater truck trail to its junction with Riverside truck trail in Section 33, T43N, R14W; southeasterly on Riverside truck trail to River Road in Section 3, T42N, R13W; east on River Road to its junction with highway US-2 in Section 5, T42N, R13W; easterly on US-2 to its junction with Manistique Lake Road at the northeast corner of Section 30, T43N, R11W; northerly on Manistique Lake Road to the Luce County line; northerly on Luce County Road 135 to its junction with Luce County Road 98; west on Luce-98 to its junction with Old Seney Road (Luce-467 and continuation in Schoolcraft County) in Section 19, T45N, R12W; northwesterly on Old Seney Road to M-28 in the village of Seney; west on M-28 to point of beginning.

Only three geese were known to have been taken legally. There were reports of a couple more. There also were reports of illegal kills and one crippled bird picked up on the Manistique River was brought in to the refuge. It is estimated that approximately 30 geese might have been taken both legally and illegally.

Duck hunting was better this year than it had been in recent years. Good numbers of mallards and blacks began appearing in early September and remained throughout October. Local hunters made good use of the State lands east of M-77 with fair to good success.

Approximately 90% of the refuge was open to rifle deer hunting again this year. Hunting pressure was down this year as fewer licenses were sold. Also, there seemed to be a definite reduction in the "riff-raff" element. An estimated 1,500 hunters gained 4,089 hunter use days on the refuge taking an estimated 130 deer including 47 bucks, 24 antlerless and 59 of unknown sex. One bear was reported, but not seen.

Check stations were set up at the Driggs entrance and the Sub-headquarters entrance to age and sex deer as they were brought out. This data was collected to cooperate with the Michigan Department of Conservation in their deer management program.

Mr. Theodore Koehler, 63, of Ann Arbor, Michigan suffered a fatal heart attack while hunting on the refuge. He was survived by his wife Maria.

### E. Violations

There were fewer refuge violations this year but illegal deer activities along the boundary road system continued as "a way of life".

While on patrol in late October Conservation Officer Walstrom and Refuge Manager Hakala apprehended Arnold Hyvonen Jr., William Berry, Gerald Hollingshead, Roger Lustila and Harold Lustila Jr. with a freshly killed deer on M-77 at the refuge entrance. The violators resisted apprehension and fled. The State Police were summoned and later apprehended them on M-77,  $\frac{1}{4}$  mile north of Germfask. The case was handled in State court where Mr. Hyvonen was tried by jury, convicted and fined \$61.05, sentenced to 5 days in the county jail and hunting privileges were revoked for 3 years for illegal possession of a deer. Mr. Berry and Mr. Hyvonen were convicted and fined \$20.20 for disorderly conduct and profanity. The others involved were dismissed on grounds of insufficient evidence.

While on patrol along County Road 436 adjacent to the refuge boundary Refuge Manager Hakala checked a deer that was improperly tagged. Conservation Officer Lambert was summoned and took over the case.

Biologist Updike apprehended a hunting party camping in an area closed to camping. They were instructed to secure a camping permit from headquarters and to move into an area open to camping. Three hours later they had not moved and were in the woods hunting. The case was turned over to GMA Branzell.

### F. SAFETY

Monthly SAFETY meetings were held on the last Monday of each month. A listing of the discussion leaders and topics are as follows:

<u>Month</u>	<u>Topic</u>	<u>Discussion Leader</u>
January	Region 3 SAFETY Committee Annual Report (No. 66-2)	Hakala
February	Water Control SAFETY -- the do's and don't's	Losey
March	Farming SAFETY	Anderson
April	Heavy-Duty Equipment SAFETY	Orlich
May	Water SAFETY (boating)	Doran
June	Drive Trapping and Banding Canada Geese SAFETY	Updike

<u>Month</u>	<u>Topic</u>	<u>Discussion Leader</u>
July	Past Accidents at Seney	Doran
August	Home SAFETY	Halladay
September	Chain Saw SAFETY	Losey
October	Gun and Hunting SAFETY	Anderson
November	Winter Driving SAFETY	Halladay
December	Bureau SAFETY Policy	Doran

In addition to the above listed monthly SAFETY meetings, weekly SAFETY meetings were held. During the seasonal employment period, bi-weekly (every Tuesday and Thursday) SAFETY meetings were held. All personnel participated in these sessions.

At the close of the year the station SAFETY record was 604 days without a lost-time accident. One accident occurred to Seney personnel this year. On June 17, while working on a fencing project, Leo D. Lawrence, seasonal laborer, had a piece of a staple break off, striking and embedding in his wrist. Minor surgery was required and Mr. Lawrence reported for work the following morning.

Other accidents occurring during this period are as follows:

Dr. Carlton M. Herman

Dr. Herman, Patuxent Wildlife Research Center, Laurel, Maryland, struck and killed a deer with the refuge sedan delivery on June 14. There was no personal injury; however, the vehicle was damaged in the amount of \$259.81.

Theodore Koehler

Mr. Koehler was hunting deer on the refuge on November 13, when he suffered a fatal heart attack.

With the transfer of Seney's forester, no further work was done to expand the Woods Work SAFETY Guide which was developed in 1965. Seney's Safe Work Practices Handbook was revised and new additions incorporated.

SAFETY and fire fighting equipment purchased during the year include SAFETY gasoline cans, goggles, eye shields, ring bouys, automotive



seat belts, fire extinguishers, first aid kits, headlamps, canvas pails, council tools, back-pack pumps, shovels, axes and picks. Other SAFETY items will be acquired as funds and project hazards dictate.

#### Michigan-Wisconsin Timber Producers Association

The Michigan-Wisconsin Timber Producers Association held four evening sessions on SAFETY for woods workers. Meetings were held on February 7, 9, 14 and 16 with the respective topics: Logging SAFETY, Care for the Injured, Bookkeeping and Compensation. Personnel attending from this station were Refuge Forester Milligan, Refuge Mechanic Orlich and Maintenance men Losey. All meetings were held in the Garfield Township Hall, Engadine, Michigan.

#### First Aid Instruction

During March refuge personnel received instruction on "First Aid to the Injured". Troopers Nalbert Gerber and Robert Barr of the Michigan State Police, Manistique Post, Manistique, Michigan were the instructors. The two-three hour classes were held in the Visitor Center auditorium on March 2, 9, 16, 23 and 30. The first meeting was held from 10:00 A.M. to noon. However, being more convenient for the Troopers, the remaining meetings were scheduled for 7:30 P.M. All personnel received certificates for completing the course.

#### Civil Defense Training Course

During the month of March refuge personnel also participated in a Radiological Monitoring Course, sponsored by Michigan Technological University, Houghton, Michigan. This course was held at the Newberry State Hospital, Newberry, Michigan. Classes were held on March 10, 17, 24 and 31, commencing at 6:00 P.M. and continuing for 4-5 hours. Mr. Wayne Maki, Cedarville, Michigan, was the instructor. An examination was given at the conclusion of instruction and certificates were presented to successful participants.

### VII. OTHER ITEMS

#### A. Items of Interest

##### 1. Regional Conference

Refuge Manager Hakala, Assistant Refuge Manager Halladay, Wildlife Biologist Updike and Refuge Forester Milligan attended the Regional Conference in Minneapolis during the week of January 24-28.

## 2. Arden Hills Refuge Manager Training School

Wildlife Biologist Updike and Refuge Forester Milligan attended the Arden Hills Refuge Manager Training Course, Arden Hills, Minnesota from April 17 through May 20.

## 3. Personnel

### Permanent

Roy J. Milligan, Refuge Forester, transferred to the Iroquois Job Corps Conservation Center, Medina, New York on June 1. He had entered on duty at Seney on March 8, 1965 after serving with the U.S. Forest Service in Arkansas and New Hampshire. While at Seney, Roy developed a station Forest Fire Fighting Plan and a Woods Work SAFETY Handbook. He also initiated the big task of type mapping the refuge, and had completed approximately 21,000 acres.

### Seasonal

#### Student Assistants

Three assistants were assigned to Seney for the summer by the Regional Office. Due to a breakdown in communications, many schools had not advised prospective student employees of Civil Service requirements initiated for 1966. As a result only one Wildlife Aid position was filled, the remainder were hired as seasonal laborers.

Seven assistants were hired locally: four (college students) as seasonal labores and three (high school) under the President's Youth Opportunity Campaign.

Student assistants are given an opportunity to participate in all phases of the refuge program. Those assigned by the Regional Office received experience in public relations: conducting the daily guided tour and manning the Visitor Center. All of the college students were assigned a special research project on which they reported in addition to their report on summer activities. The three students hired under the President's Youth Opportunity Campaign were only required to report on their summer's activities. All students were involved in the station's SAFETY program and participated actively. Following is a listing of student assistants employed during 1966 (See Page 49).

<u>Name</u>	<u>School</u>	<u>Curriculum</u>	<u>Position</u>	<u>Project</u>
* R. Todd Eberhardt	Southern Illinois University, Carbondale, Illinois	Wildlife Management	Wildlife Aid	Aquatic Transect Study
* Tommy J. Early	Ohio State University, Columbus, Ohio	Wildlife Management	Laborer	Ring-necked Duck Study
* George H. Studinski	Utah State University, Logan, Utah	Wildlife Management	Laborer	Woodduck Nest Box Survey
Robert L. Burns	Northern Michigan University, Marquette, Michigan	Business Administration	Laborer	Measuring and Mapping Refuge Farm Fields
Garth R. Jacobson	Michigan State University, E. Lansing, Michigan	Biological Science	Laborer	Sharp-tailed Grouse Study
Harold E. Miller	Northern Michigan University, Marquette, Michigan	Biological Science	Laborer	Measuring and Mapping Refuge Farm Fields
Kim R. Strawe	Lake Superior State College, Sault Ste. Marie, Michigan	Biological Science	Laborer	Woodcock Study
Anthony D. Handrich	graduated Manistique High School and now attending Northern Michigan University, Marquette, Michigan	Music	President's Y.O.C.	
Susan L. Jack	graduated Manistique High School and now attending Northern Michigan University, Marquette, Michigan	Major: English Minor: Biological Science	President's Y.O.C.	Visitor Center Attendant
Donald E. Lloyd	Attending Manistique High School, Manistique, Michigan		President's Y.O.C.	

\* Assigned to Seney by Regional Office.

Many work projects were accomplished and an excellent SAFETY record was maintained making this a very successful summer. Many hours were donated willingly to complete assignments. All have returned to continue their education. We wish them success!

#### 4. Displaced Pet

A stray dog was captured on the refuge on June 10 by Manager Hakala and Clerk Doran. It was kept at the manager's residence until June 29 when a home was found for it at Mrs. Lilian Carson's in Germfask.

#### 5. Michigan Canada Goose Seminar

The second annual Michigan Canada Goose Seminar was held at Seney Refuge on June 14-15. It was attended by 35 persons representing several agencies, institutions and organizations including the Bureau of Sport Fisheries and Wildlife, U.S. Forest Service, Michigan Department of Conservation, Michigan Game Breeders Association, Huron-Clinton Metropolitan Authority, Kellogg Bird Sanctuary, Michigan Technological University and Michigan State University. Papers were presented by the various representatives covering federal, state and local responsibilities and programs for managing Canada Geese in Michigan. Dr. Carlton M. Herman, Patuxent Wildlife Research Center gave an excellent report on research findings and needs and how they relate to Canada Goose management.

It was felt that the seminar was very valuable as an opportunity to exchange information, to facilitate communication and understanding of other programs that are being carried out and to coordinate effort in a common purpose. Much also was gained through informal discussion and getting acquainted.

#### 6. Germfask Centennial

The town of Germfask celebrated its centennial on July 2-4. Along with the festivities and many events a parade was held on Monday morning, July 4. The refuge was asked to participate by entering a float. The basic theme and layout was suggested by Mae Hakala. A touch of outdoor beauty and genuineness and the urgency of conservation were blended into a meaningful, pleasing presentation. A photograph is included in the picture section.

#### 7. Boy Scouts Participation

On August 4 David Kubitskey, age 15, and his brother Paul, age 11, of Farmington, Michigan assisted Y.O.C. employee Don Lloyd with maintenance of the recreation areas to earn credit for their Conservation Merit Badges.



## 8. Refuge Picnic

On August 4 refuge employees and their families attended a pot-luck picnic at the Wigwam Picnic area. A total of 57 persons enjoyed the fine meal and evening together.

## 9. National Geographic Photographer

On August 4 National Geographic Magazine photographer Robert Sisson came to the refuge to take pictures for use with an article on national wildlife refuges. Mr. Sisson spent six days taking pictures of the visitor center with groups of visitors and geese in the foreground and views of the banding table being used to band Canada Geese. The entire refuge staff enjoyed meeting and working with Mr. Sisson and were sorry to see him leave.

## 10. Payment to Counties

Under the Refuge Revenue Sharing Act, Public Law 88-523, signed by President Johnson on August 30, 1964, Refuge Manager Hakala presented a check for \$6,919.23 to Joel Carley, Chairman, Schoolcraft County Board of Supervisors, on September 22. County Treasurer William E. Cowman attended the presentation.

## 11. Refuge Softball Team

With twelve seasonal employees on the staff the refuge organized a softball team. Teams played included the U.S. Forest Service, Munising; Michigan Department of Conservation, Shingleton; Schoolcraft County Road employees, Seney; Menonite Church, Germfask; and Seney Township team. There were no calls by major league scouts, but excellent public relations resulted as well as much personal enjoyment.

## 12. TV Program on Seney

On July 31 two outdoor writers-TV cameramen were guided through the refuge and took pictures for presentation on a Detroit television station. Gene Little and Jerry Chiappetta of WXYZ-TV shot over 700 feet of color film on the refuge's recreational facilities, scenery, goose flock and other wildlife. The film was condensed into a ten minute short and shown as part of the Michigan Sportsman program on October 1. The showing date coincided with the opening day of goose hunting in the Upper Peninsula and Seney's goose flock was featured along with the pros and cons of closing part of the immediate refuge area to goose hunting.

## 13. Incentive Award

Dr. Glen A. Sherwood, biologist at the Northern Prairie Wildlife

Research Center, Jamestown, North Dakota, was cited for his outstanding publication, "Canada Geese of the Seney National Wildlife Refuge". A cash award of \$150.00 was also given. Dr. Sherwood's study was conducted at Seney from 1962 to 1965.

#### 14. Christmas Party

Refuge employees and their wives enjoyed a Christmas dinner and evening of fun at Refuge Manager Hakala's home on December 17. Mechanic Orlich, and his wife Blanche, were given special honors, much to their surprise, as they were soon to celebrate their 25th wedding anniversary.

#### 15. New Arrivals

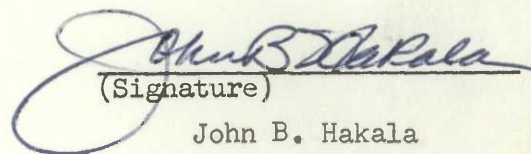
Three major happy events occurred during the year. Summer laborer Lawrence Zellar's wife, Rose, gave birth to a baby girl, Lisa Marie, on September 15. Joe and Bethel Halladay became proud parents for the second time on November 10 when Lynette Marie arrived. Jerry and Marcia Updike experienced new joy and responsibility as they welcomed Linda Lee into their family on December 18.

#### Credits:

Doran - - - - -	Sections I-A, VI-B,C,F, VII-A,B,C, typing, photo printing, mounting and assembly.
Hakala - - - - -	Section VII-A, Editing.
Halladay - - - - -	Sections III, IV, V-D, VI-A,D,E, VII-A and photo captions.
Updike - - - - -	Sections I-B, II, V-A,B,C,E, VII-A, photo printing.

## SIGNATURE PAGE

Submitted by:

  
(Signature)


John B. Hakala

Refuge Manager

---

TitleDate: February 10, 1967

Approved, Regional Office:

Date: 2/13/67  
(Signature)

Asst.

Regional Refuge Supervisor

3-1750  
Form NR-1  
(Rev. March 1953)

W A T E R F O W L

REFUGE Seney

MONTHS OF September TO December, 1966

(1) Species	(2) Weeks of reporting period									
	: 9/1-8 : 1	: 9/9-15 : 2	: 9/16-22 : 3	: 9/23-29 : 4	: 9/30-10/6 : 5	: 10/7-13 : 6	: 10/14-20 : 7	: 10/21-27 : 8	: 10/28-11/3 : 9	: 11/4-10 : 10
<b>Swans:</b>										
Whistling										5
Trumpeter										
<b>Geese:</b>										
Canada	1100	1100	1150	1200	3000	4500	4500	5000	5100	1700
Cackling										
Brant										
White-fronted										
Snow								100	75	10
Blue								175	100	20
Other										
<b>Ducks:</b>										
Mallard	250	275	450	650	600	600	550	575	650	75
Black	250	300	500	400	550	450	650	450	650	125
Gadwall										
Baldpate	5	30	100	300	200	300	150	275	300	
Pintail	10	10	10	10	10					
Green-winged teal	10	10	20	50	50	75	75	35	50	
Blue-winged teal	250	500	350	300	150	50	10	10	5	
Cinnamon teal										
Shoveler	5	5	5	5						
Wood	150	200	300	350	250	150	75	25	20	
Redhead										
Ring-necked		400	550	600	950	900	2100	4000	3500	125
Canvasback										
Scaup										
Goldeneye				10	5	10	20	10	25	25
Bufflehead					5	5	10	10	20	10
Ruddy										
Other										
Hooded Merganser	50	60	50	40	20	20	50	50	100	5
Common Merganser	20	40	30	30	20	40	60	20	50	10
<b>Coot:</b>			1		15	25	50	50	40	5

Int. Dup. Sec.,



Cont. NR-1  
(Rev. March 1953)

WATERFOWL  
(Continuation Sheet)

MONTHS OF September TO December, 19<sup>66</sup>

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11/11-17	11/18-24	11/25-12/1	12/2-8	12/9-15	12/16-22	12/23-29	12/30-31			
<b>Swans:</b>									70		
Whistling	5										
Trumpeter											
<b>Geese:</b>											
Canada	1500	450	250	75					214,375		
Cackling											
Brant											
White-fronted											
Snow									1,275		
Blue									2,065		
Other											
<b>Ducks:</b>											
Mallard	25	5							32,935		
Black	20	5							30,450		
Gadwall											
Baldpate									11,620		
Pintail									350		
Green-winged teal									2,625		
Blue-winged teal									11,375		
Cinnamon teal											
Shoveler									140		
Wood									10,640		
Redhead											
Ring-necked	10								91,945		
Canvasback											
Scaup											
Goldeneye	75	20							1,400		
Bufflehead	5								455		
Ruddy											
Other											
Hooded Merganser	10								3,185		
Common Merganser									2,245		
<b>Coot:</b>									1,302		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	70	5	
Geese	217,715	5,275	
Ducks	199,365	5,460	
Coots	1,302	50	

**SUMMARY**

Principal feeding areas Geese: Diversion Fields, Sub-Hdqs. area, Chicago Farm. A-1. B-1. E-1. F-1 and C-3

Ducks: A-1. B-1. C-1. G-1. F-1. H-1. I-1. L.G.P. and C-3 Pools

Principal nesting areas \_\_\_\_\_

Reported by Gerald H. Updike  
Wildlife Biologist

**INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)**

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).



3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)

Refuge.....Refuge.....Months of September.....to December.....1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Common Loon	Summer Resident				1	9/15				45
Pied-billed Grebe	Summer Resident									70
Horned Grebe	Summer Resident		(None observed)							10
American Bittern	Summer Resident									125
Great Blue Heron	Summer Resident				1	10/20				100
Green Heron	Summer Resident									25
Sandhill Crane	Summer Resident				5	10/10				90
Sora Rail	Summer Resident		(None observed)							70
Virginia Rail	Summer Resident		(None observed)							50
II. <u>Shorebirds, Gulls and Terns:</u>										
Woodcock	Summer Resident		3,000	9/15-10/1						4,000
Common Snipe	Summer Resident		200	10/1-30						300
Greater Yellowlegs	Summer Resident		200	9/15-25						200
Killdeer	Summer Resident									150
Spotted Sandpiper	Summer Resident									150
Solitary Sandpiper										50

(over)

(1)	(2)	(3)	(4)	(5)	(6)
<b>III. Doves and Pigeons:</b>					
Mourning dove	(None observed)				2
White-winged dove					
<b>IV. Predaceous Birds:</b>					
Golden eagle					
Duck hawk					
Horned owl	Resident (None observed)				30
Magpie					
Raven	Resident	75	12/1-31	2	70
Crow	Summer Resident	300	9/1-30	1	350
Marsh Hawk	Summer Resident			1	70
Rough-legged Hawk	(None observed)				20
Snowy Owl	(None Observed)				2
Bald Eagle	Summer Resident			2	12
Reported by.....					

Gerald H. Updike, Wildlife Biologist

## INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
II. Shorebirds, Gulls and Terns (Charadriiformes)  
III. Doves and Pigeons (Columbiformes)  
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.



3-1750c  
Form NR-1  
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Seney

Year 1966

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
			No waterfowl hunting allowed on this refuge					

(over)

### INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$



3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

Refuge Seney Months of September to December, 1966

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird Number broods observed Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	Upland pine, hard- wood and swamp edges. 30,000 acres	17			1,750	Incidental Observations
Spruce Grouse	Spruce and jack- pine forest. 5,000 acres	50			100	Incidental Observations
Sharp-tailed Grouse	Brushland, open terrain, farm units, roads and dikes. 10,000 acres	36			275	Spring census and incidental observations

INSTRUCTIONS

# INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS\*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

\*Only columns applicable to the period covered should be used.



3-1757  
Form 1-3  
(June 1945)

BIG GAME

Refuge Seney Calendar Year 1966

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number								Number	Source		
White-tailed Deer	Variable - marshland, hardwoods, coniferous forests, brushland and open ground -- 80,000 acres	U	130	0	0	0	U	U	0	0	1,700 *	30	
Black Bear	Variable - marshland, hardwoods, coniferous forests, brushland and open ground -- 80,000 acres	U	1	0	0	0	U	U	0	0	20		

Remarks: \* Based upon observations and checks of hunter killed deer.

Reported by \_\_\_\_\_

## INSTRUCTIONS

### Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755

Form 3-5  
6070

## DISEASE

Refuge SeneyYear 19 66

## Botulism

## Lead Poisoning or other Disease

Period of outbreak \_\_\_\_\_

Period of heaviest losses \_\_\_\_\_

## Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) \_\_\_\_\_

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) \_\_\_\_\_

Condition of vegetation and invertebrate life \_\_\_\_\_

Remarks \_\_\_\_\_

Kind of disease UnknownSpecies affected Canada Geese

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered 10Number lost 50

Source of infection \_\_\_\_\_

Water conditions NormalFood conditions Normal

Remarks Most of the ill goslings had some sort of crippling ailment whereby they were unable to keep up with the brood and became susceptible to exposure and depredation. (Leucocytozoon and/or Aspergillosis are possible contributing factors)



PUBLIC RELATIONS  
(See Instructions on Reverse Side)

Refuge SeneyCalendar Year 1966

## 1. Visits

a. Hunting 4,089      b. Fishing 3,828      c. Miscellaneous 65,701      d. TOTAL VISITS 73,618

## 1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	None		
Upland Game	None		
Big Game	4,089	87,000	
Other			

Number of permanent blinds NoneMan-days of bow hunting included above NoneEstimated man-days of hunting on lands adjacent to  
refuge 5,000

## 1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	759	
Streams and Shores		21

## 1c. Miscellaneous Visits

Recreation 61,303      Official 2,143Economic Use 2,255      Industrial None

## 2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge		Off Refuge	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs	3	72		
Schools	23	937	11	510
Service Clubs	1	14	1	25
Youth Groups			12	420
Professional-Scientific	1	16	8	254
Religious Groups			3	118
State or Federal Govt.	3	128	9	315
Local Gov't			1	25
Other 4-H Groups	2	160		

## 3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	8	Radio Presentations	
Newspapers (P.R.'s sent to)	14	Exhibits	
TV Presentations		Est. Exhibit Viewers	



3-1757  
Form NR-7  
Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Seney Year 1966

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
<u>Carex</u> spp.							Lower Goose Pen	3 bunches per yard	1,000 yds.	3,000 bunches transplanted	Aug.	Good	
<u>Eleocharis</u> <u>acicularis</u>													
<u>Scirpus</u> <u>acutus</u>													
<u>S. validus</u>													

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

Remarks: Transplanted to control nest island erosion

Total acreage planted:

Marsh and aquatic \_\_\_\_\_  
Hedgerows, cover patches \_\_\_\_\_  
Food strips, food patches \_\_\_\_\_  
Forest plantings \_\_\_\_\_

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3-1758  
Form NR-8  
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Seney County Schoolcraft State Michigan

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Buckwheat	15	275 bu.			5	150 bu.	20	Winter Rye - ten tons of graze forage	61
Oats	37	666 bu.			74	800 bu.	111		
Winter Rye							61		
Winter Rye (ripe)					8	30 bu.	Planted in 1965	Tame hay - forty-five tons of graze forage	199
New Seeding (Alfalfa, Red Clover and Brome)							53		
New seeding (Alsike, Ladino and Brome)							40		
								Fallow Ag. Land Diversion Unit	50

No. of Permittees: Agricultural Operations 1 Haying Operations 1 Grazing Operations None

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa, Red Clover and Brome	222.9	124		1. Cattle	None			
				2. Other	None			
Alsike, Ladino and Brome	95.2	75		1. Total Refuge Acreage Under Cultivation Includes fallow land listed above				464
				2. Acreage Cultivated as Service Operation Includes fallow land listed above				231
Hay - Wild								



DIRECTIONS FOR PREPARING FORM NR-8  
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

## REFUGE GRAIN REPORT

Refuge SeneyMonths of January through December, 1966

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Yellow Corn (shelled)	258 bu.	837 bu.	1,095 bu.			470 bu.		625 bu.		625 bu.	
Yellow Corn (ear)	0 bu.	115 bu.	115 bu.					115 bu.		115 bu.	
Rodney Oats	7 bu.	0 bu.	7 bu.		7 bu.		7 bu.	0 bu.			
AuSable Oats	6 bu.	0 bu.	6 bu.		3 bu.		3 bu.	3 bu.	3 bu.		
Gary Oats	0 bu.	50 bu.	50 bu.		38 bu.		38 bu.	12 bu.	12 bu.		
Proso Millet	0 lb.	500 lb.	500 lb.		25 lb.		25 lb.	475 lb.	475 lb.		
Buckwheat	0 bu.	40 bu.	40 bu.					40 bu.	40 bu.		
Balbo Winter Rye	52 bu.	160 bu.	212 bu.		138 bu.		138 bu.	74 bu.	74 bu.		

(8) Indicate shipping or collection points \_\_\_\_\_

(9) Grain is stored at Granary in stone building and metal grain bins.(10) Remarks Condition good.

\*See instructions on back.



(10) Remarks

NR-8a

(8) Grain is stored at

(9) Indicate shipping or collection points

# REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

**Report all grain in bushels.** For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

16-61482-1 U. S. GOVERNMENT PRINTING OFFICE

Variety	On Hand Beginning Period	Received During Period	Total	Disposition		Total	Period End of On Hand	Proposed or Suggested Use		Shipping
				Disposed of	Seeded			Disposed of	Seeded	
(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)		(9)

Refuge \_\_\_\_\_ General \_\_\_\_\_ Months of \_\_\_\_\_ through \_\_\_\_\_ December 1944

REFUGE GRAIN REPORT

## PEST PLANT CONTROL REPORT

## Seney

Refuge, Calendar Year 1966

(To be inserted in the September-December Narrative Report.)

Plot No.	Acres	Species Treated	Growth Stage	Date of Treat.	Chem. or Method Used	Dilut. or Carrier	Rate Per Acre	Water Depth	Material	Labor	Equipment	Total Cost	% Kill last Observ.	Date last Observ.
				<u>NONE THIS PERIOD</u>										

## INSTRUCTIONS ON REVERSE SIDE

Additional forms will be supplied by Regional Office upon request.

Remarks: Include any important information not given in above columns, including No. of years an area has been treated where repeated treatments have been made.



## INSTRUCTIONS

1. Plot No: Number used to identify the area of infestation in the field and on maps.
2. Acres: Use decimals, not fractions.
3. Species Treated: Use common and scientific names. LIST ONE SPECIES - THE PRIMARY ONE.
4. Growth Stage: i.e., Bud, half leaf, full leaf, early flower, full flower, etc.
5. Date of Treatment: Dates applications were made, using a separate line for each area treated. If more than one treatment is made on the same area during the summer, a separate line is used for each application.
6. Chemical or Method Used: Show type of herbicide; i.e., 2,4-D ester, etc., also mechanical methods (mowing, plowing, burning etc.)
7. Diluent or Carrier: Show diluent or carrier used plus stickers, spreaders, etc.
8. Rate Per Acre: Give lbs. acid equivalent per acre - not lbs. of herbicide or total mix. Check the label for % of acid equivalent.
9. Water Depth: Give depth in inches.
10. Cost, Material: Include herbicide and carrier.
11. Cost, Labor: Take from Application form.
12. Cost, Equipment: Take from Application form.
13. Total Cost: Take from Application form.
14. Cost per Acre: Take from Application form.
15. % Kill: Show percent dead plants with no regrowth showing at last observation.
16. Date Last Observation: Last date plants were checked following mechanical treatment or application of herbicide. If the same area is treated more than once during the same season, a new entry should be made on a separate line for each separate treatment. If the same area has been treated for several years, this should be shown in the space for remarks, giving the number of years the area has been treated.

3-1760  
Form NR-1  
(April 1963)

## HAYING AND GRAZING

Refuge Seney Year 19<sup>66</sup>

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
	None this period								

Totals:

Acreage grazed.....

Animal use months.....

Total income Grazing.....

Acres cut for hay-----

Tons of hay cut.....

Total income Haying.....



TIMBER REMOVAL

Refuge Seney Year 1946

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Harold R. Peters	2	Portions of NW <sup>1</sup> / <sub>4</sub> , NE <sup>1</sup> / <sub>4</sub> , SW <sup>1</sup> / <sub>4</sub> , SE <sup>1</sup> / <sub>4</sub> Sec. 8 T 44 N R 13 W (Comp. 16)	40	347 cords	\$1.45/ std. cd.	\$504.55	All merchantable timber over 6" D.B.H.	Aspen 50% Paper Birch 50%

Total acreage cut over 40 Total income \$504.55

No. of units removed B. F. \_\_\_\_\_ Method of slash disposal Scatter

Cords 347

Ties \_\_\_\_\_

\_\_\_\_\_

3-1979 (NR-12)  
(9/63)

Bureau of Sport Fisheries and Wildlife

Refuge

**Seney**

**ANNUAL REPORT OF PERSTICIDE APPLICATION**

Proposal Number

Reporting Year

1966

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		NONE THIS PERIOD						

10. Summary of results (continue on reverse side, if necessary)

Fig. 2. Seney Refuge staff. Front row, left to right: Omer L. Doran, Clerk; Glen C. Losey, Maintenceman; William G. Anderson, Maintenceman; George Orlich, Mechanic; Back row, left to right: John B. Hakala, Refuge Manager; Gerald H. Updike, Biologist; Orlynn J. Halladay, Assistant Refuge Manager.

January 18, 1967

R 130-11

Updike





Fig. 3. The entire staff took a course in First Aid and received cards. Michigan State Police Trooper Nalbert Gerber looks on as Trooper Robert Barr is being worked on.

March 28, 1966

R 102-4

Updike

Fig. 4. The refuge staff received training in radiological monitoring through a 16 hour course given at Newberry.

March 31, 1966

R 103-4

Updike





Fig. 5. Forester Milligan inspects the hemlock-hardwood on the site along the Manistique River which is being considered for development into a picnic area.

March 9, 1966

R 99-12

Updike



Fig. 6. The Austin-Western H-99 grader was given a complete new paint job.

March 7, 1966

R 99-9

Halladay

Fig. 7. Guard-rails were constructed for the four spillway bridges along the tour routes that did not have them.

December 13, 1966

R 130-2

Halladay





Fig. 8. Fire emergency hoses were acquired for the residences.

March 12, 1966

R 100-7

Updike

Fig. 9. The refuge dump was cleaned up and buried and a sanitary land fill pit was dug and is being maintained.

July 29, 1966

R 121-1

Hakala





Fig. 10. Snowfall was light during the early part of the year. Considerable bare ground was exposed in mid-February.

February 19, 1966

R 99-3

Updike

Fig. 11. The first geese returned on March 4 when there was still plenty of ice, snow and cold. Others soon followed.

March 17, 1966

R 117-2

Hakala





Fig. 12. Due to a low inflow rate G-1 Pool level  
could be raised only gradually. It remained  
locked in ice late into March.

March 21, 1966

R 101-7

Updike

Fig. 13. Raising water levels hastens ice break-up  
in D-1 Pool. Same date as above.

March 21, 1966

R 101-6

Updike



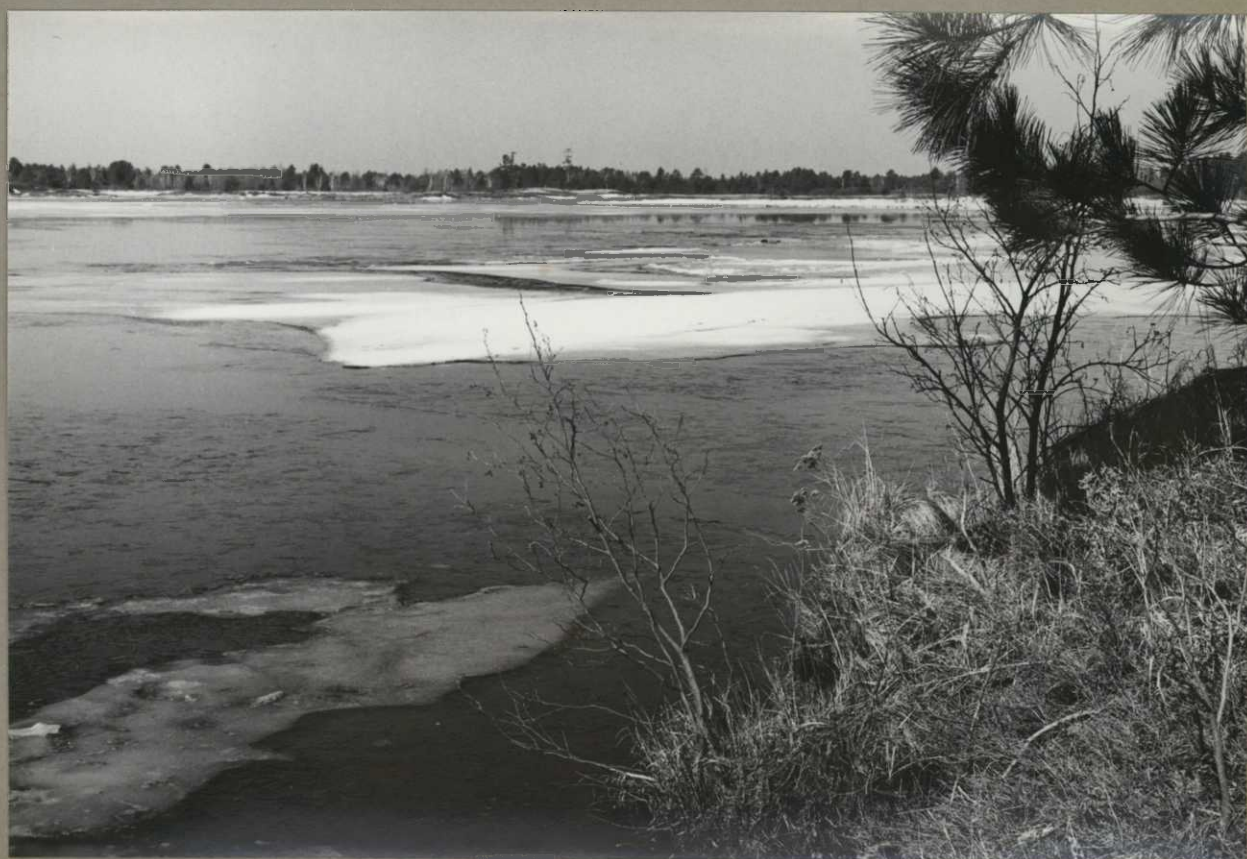




Fig. 14. Some of the 100 woodduck nest boxes that were constructed were put up in trees and others were mounted on posts. A shield to protect against animal predators has to be added yet.

March 17, 1966

R 101-4

Updike

Fig. 15. This is the third consecutive year that geese have nested on stumps in the Upper Goose Pen. There were 2 nests this year.

April 25, 1966

R 106-4

Halladay



Fig. 16. Great care is taken by Norm Johnson, Division of Wildlife Services, in making a trap set for coyote.

April 19, 1966

R 117-11

Hakala

Fig. 17. Live traps were put out at spillways and along dikes to control predators in the vicinity of the pools.

March 22, 1966

R 101-9

Updike





Fig. 18. Raccoon were successfully lured by corn.  
The wooden frame was overlaid with sheet  
metal and 1 x 1 inch weld wire proved best  
to prevent escape.

April 4, 1966

Personal Photo

Marcia Updike

Fig. 19. An adult and beaver kit taken together.  
They were relocated from an area where they  
were a problem to an area where they would  
improve habitat.

September 30, 1966

R 127-10

Updike







Fig. 20. Fyke net set by the Michigan Department of Conservation to take pike for stocking in other areas.

April 17, 1966

R 117-3

Hakala

Fig. 21. A group of trainable retarded young people had a delightful time touring the refuge and fishing at the Show Pools.

June 9, 1966

R 108-8

Doran



Fig. 22. The firework started earlier this year as the refuge mailbox and a couple others in the area were blown with firecrackers.

May 9, 1966

R 106-8

Halladay

Fig. 23. Doran and Early demonstrated the use of the fire pumper.

July 6, 1966

R 113-1

Updike





Fig. 24. Breaking a strip on Diversion Unit that had been cleared, but left fallow for a period.

September 19, 1966

R 124-7

Hakala

Fig. 25. The new strip was planted to winter rye to provide fall goose pasture.

September 19, 1966

R 124-12

Hakala







Fig. 26. Rubbish and junk had accumulated for many years at the Germfask Town Dump located on refuge lands.

June 29, 1966

R 111-5

Updike

Fig. 27. The open dump had become an unsightly rat haven and a favorite area for target shooting.

June 16, 1966

R 119-5

Hakala



Fig. 28. The dump was closed on June 13 and clean-up work began immediately.

June 16, 1966

R 119-1

Hakala

Fig. 29. The debris was burned and then buried.

June 20, 1966

R 110-7

Hakala





Fig. 30. Several inches of topsoil were spread over the area.

June 29, 1966

R 111-4

Hakala

Fig. 31. Rye and grass seed were planted. In just a few weeks it was a very pleasant looking area.

August 12, 1966

R 115-2

Halladay







Fig. 32. The boundary around the Dump Forty had never been fenced. Students Early and Studinski carry posts in along the line.

June 20, 1966

R 110-10

Hakala

Fig. 33. Maintenceman Losey setting posts after the boundary line had been brushed out.

June 20, 1966

R 110-9

Hakala





Fig. 34. Site of the ring-necked ducks nest located  
by Early during his study on that species.

June 22, 1966

R 109-11

Early

Fig. 35. A close-up of the nest reveals 10 eggs.

June 22, 1966

R 109-10

Early





Fig. 36. Geese being driven toward the trap on E-1  
Pool during the flightless period in early  
July.

July 7, 1966

R 125-4

Strawe

Fig. 37. Not until they are in the cage is the drive  
considered a success. A good catch!

July 7, 1966

R 125-5

Strawe



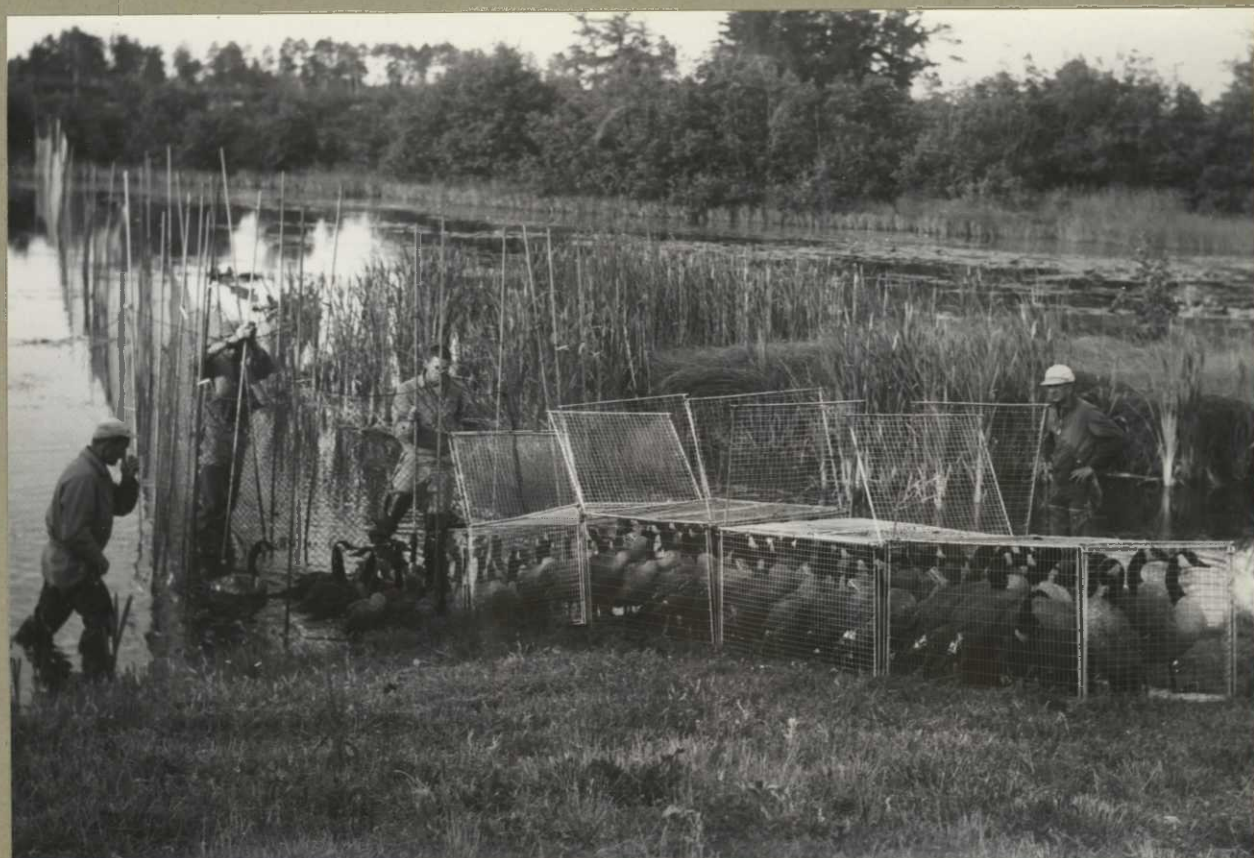




Fig. 38. Traps designed after the common dove trap but, modified for ducks, worked very successfully this year.

August 11, 1966

R 125-13

Strawe

Fig. 39. Modified Ohio duck traps worked very well for ring-necks when placed just out from long peninsulas and sand bars.

August 18, 1966

R 116-5

Early

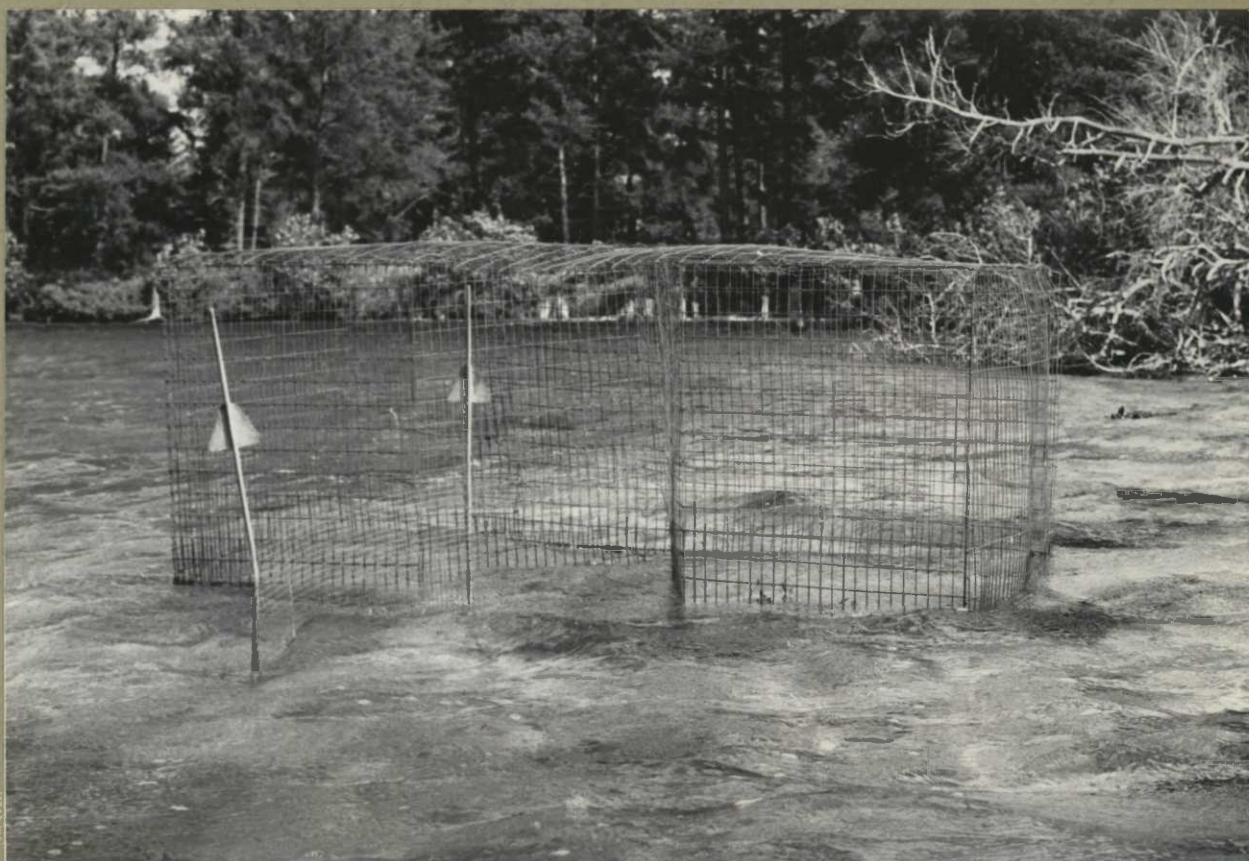


Fig. 40. Driftwood was removed from the east and south shores of Lower Goose Pen.

July 11, 1966

R 113-8

Halladay

Fig. 41. Wood and debris were cleaned up along the north side of the Lower Goose Pen prior to working and planting the area.

August 26, 1966

R 116-8

Updike





Fig. 42. An area at the west end of the Lower Goose Pen, below Smith Field, was worked and planted to rye, Proso millet and grass seed.

August 12, 1966

R 115-7

Halladay

Fig. 43. The Lower Goose Pen area below Sub-head-quarters field was worked and planted to rye, millet and grass seed. These areas will serve as attractive grazing sites for broods and adults alike.

September 23, 1966

R 122-5

Hakala







Fig. 44. New nesting islands in Lower Goose Pen with water at crest levels. Islands were constructed in pairs with about 30 feet separating the two. The pairs were spaced 200 feet apart and the same distance from the shore.

October 4, 1966

R 117-9

Hakala



Fig. 45. The fawn of the doe killed near the refuge entrance by violators stayed in the area a couple of days before disappearing.

October 26, 1966

R 128-8

Doran

Fig. 46. A sandhill crane chick, less than a week old, was observed on the Driggs Road near C-2 dike road.

June 15, 1966

R 109-1

Urdike





Fig. 47. The public is kept informed.

December 7, 1966

R 129-7

Halladay

Fig. 48. Other agencies have made use of the Visitor Center auditorium facilities. A Michigan Department of Conservation District 3 and 4 law enforcement meeting was held here in August.

August 18, 1966

R 115-12

Updike







Fig. 49. Dr. George S. Hunt and his wildlife management students from the University of Michigan spent a day seeing the refuge and learning about the management program.

July 21, 1966

R 122 -3

Hakala

Fig. 50. The refuge float in the Germfask Centennial Parade.

July 4, 1966

R 112-12

Updike



Fig. 51. Only skeleton and feathers remain of the  
goose killed on the nest in Upper F-1 Pool.

May 2, 1966

R 106-7

Halladay

Fig. 52. Bank caving is a problem along most of the  
swifter streams. T-2 Pool outlet is nearly  
choked resulting from such action.

April 25, 1966

R 118-4

Hakala





Fig. 53. Aerial view of sand deposition along  
Diversion Ditch.

September 17, 1966

R 126-3

Updike

Fig. 54. Siltation in the Diversion Ditch is in-  
hibiting the flow of water into Units I  
and II.

September 19, 1966

R 121-3

Hakala







Fig. 55. Bare sand areas tend to stay that way until  
some work is done on them.

September 19, 1966

R 121-8

Hakala

Fig. 56. Bank erosion is occurring along the Driggs  
River below the swayback bridge on the  
Driggs Road.

September 19, 1966

R 123-1

Hakala



Fig. 57. Hay mulch is put on the bare cuts made along the Chicago by-pass road.

November 21, 1966

R 129-2

Halladay

Fig. 58. A series of beaver dams such as this creates excellent waterfowl habitat at a very low cost.

June 6, 1966

R 108-4

Updike



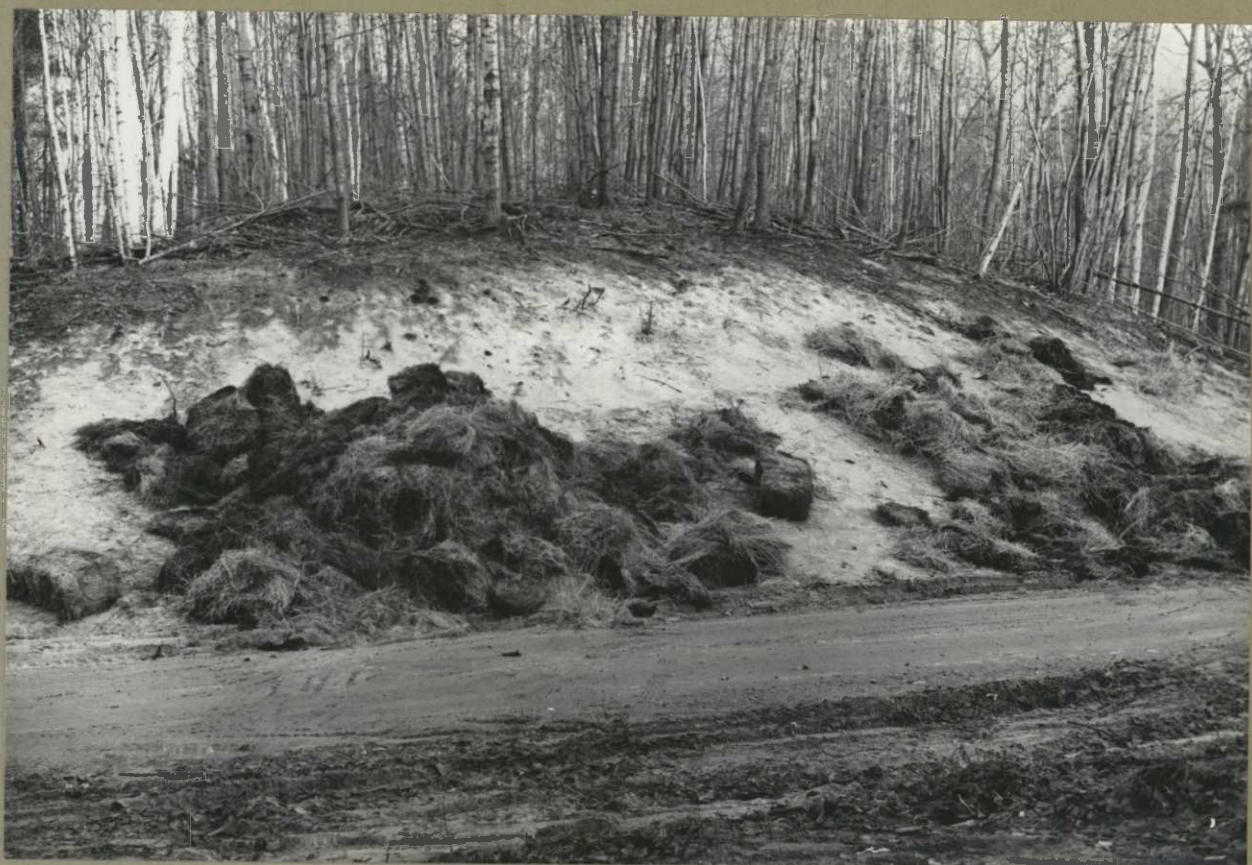


Fig. 59. Additional rock rip-rap was put below the spillway at A-1 Pool.

September 23, 1966

R 127-6

Updike

Fig. 60. The rock rip-rap and heavy gravel have held well against the heavy flow of water from A-1.

July 6, 1966

R 113-6

Halladay



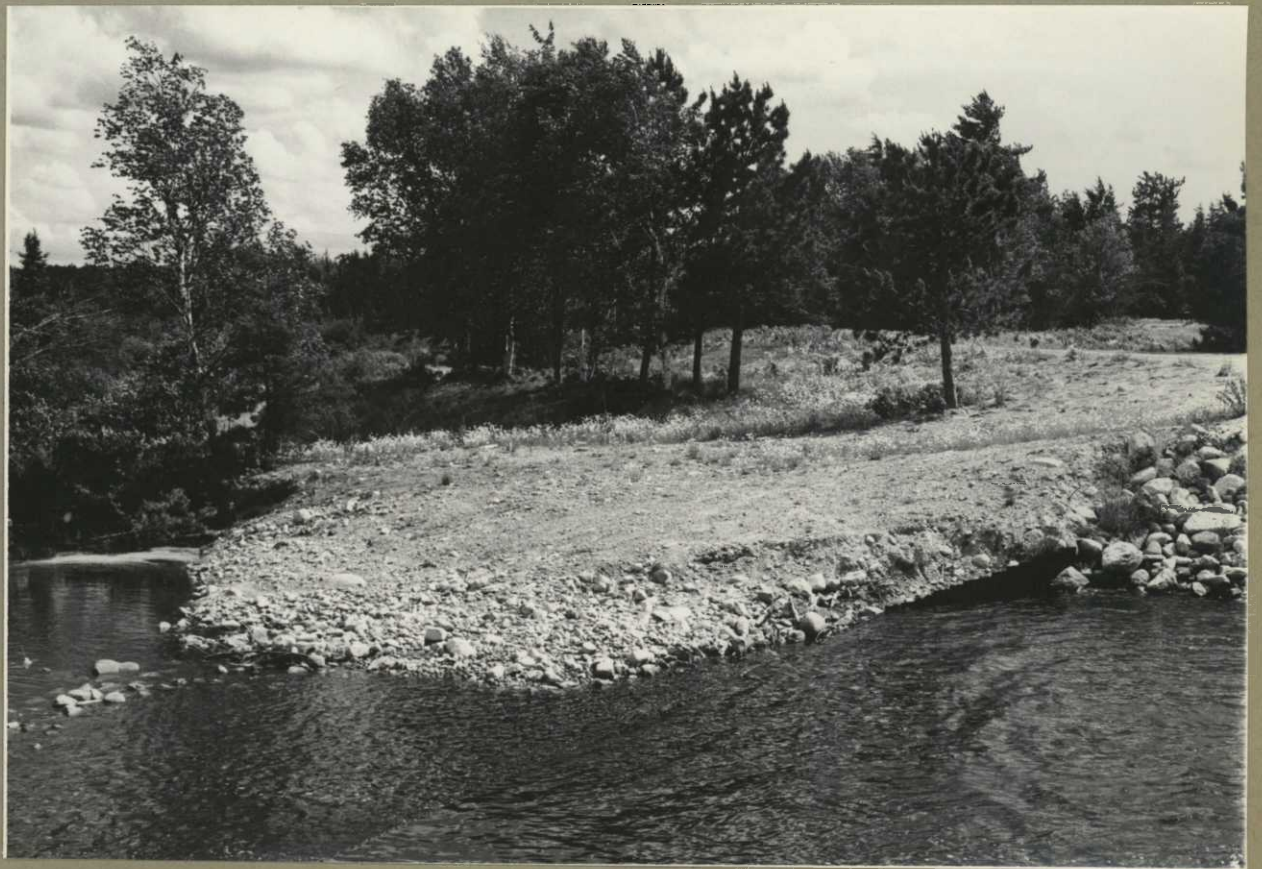
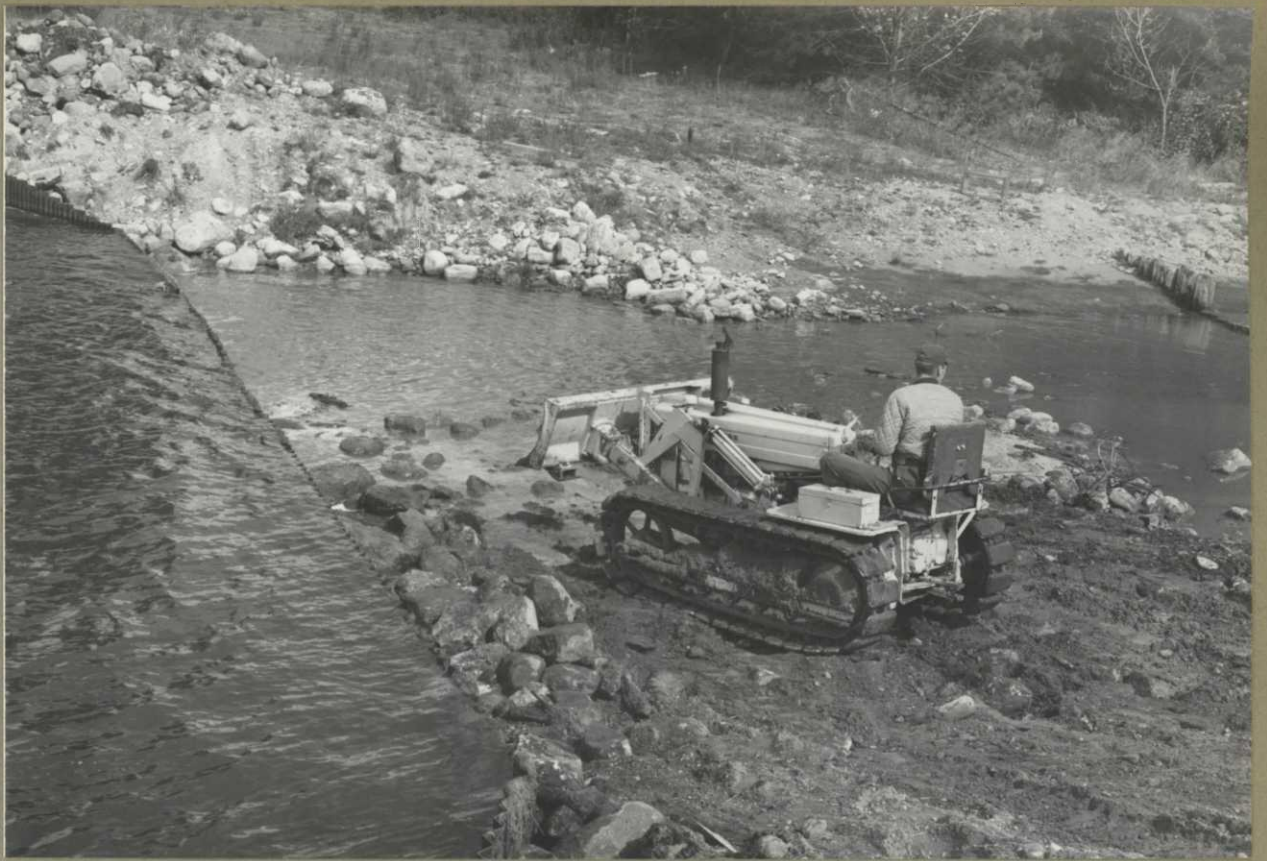




Fig. 61. Loading peeled aspen and birch pulpwood sticks at the Gray's Creek sale.

July 14, 1966

R 120-12

Hakala

Fig. 62. Forest products on the way to the mill. Utilizing the resources in this way also results in improved habitat.

July 14, 1966

R 120-9

Hakala



Fig. 63. Camping is permitted only during rifle deer season. Hunting pressure was moderate and success was fair.

November 13, 1966

R 124-1

Hakala

Fig. 64. A check station was set up at Sub-head-quarters to gather deer sex and age data in cooperation with the Michigan Department of Conservation.

November 13, 1966

R 128-10

Updike





Fig. 65. Another of Nature's oddities. Turbulent water  
and freez~~ing~~ing foam created these "frozen pancakes"  
below F to E spillway.

December 13, 1966

R 130-3

Halladay



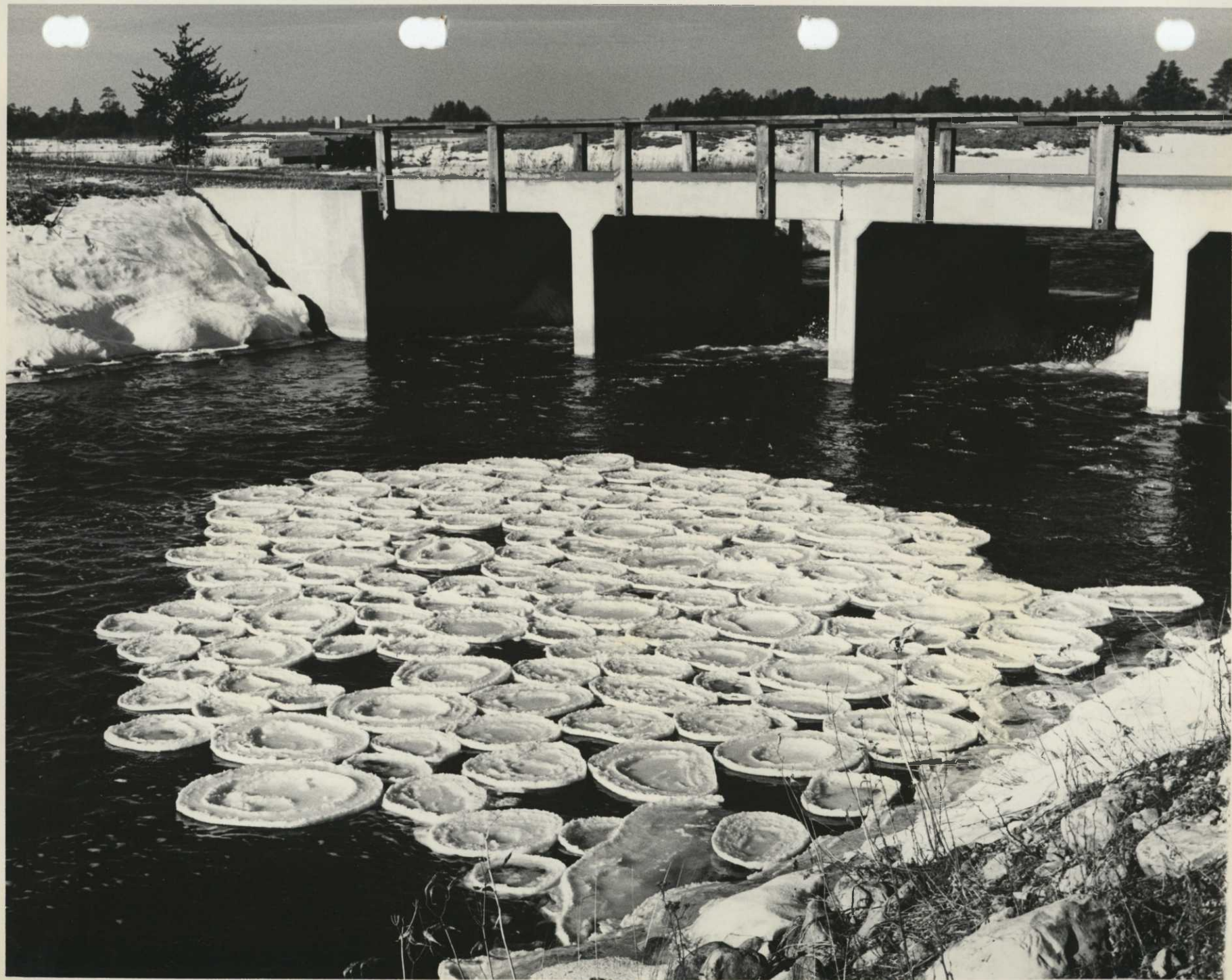




Fig. 66. A view from the lighthouse on Huron Islands National Wildlife Refuge. The islands are granite with thin accumulations of soil.

May 25, 1966

R 118-12

Hakala

Fig. 67. The ecology is fascinating with abundant lichens and large trees existing side by side all reflecting the severity of the climate.

May 25, 1966

R 118-7

Hakala

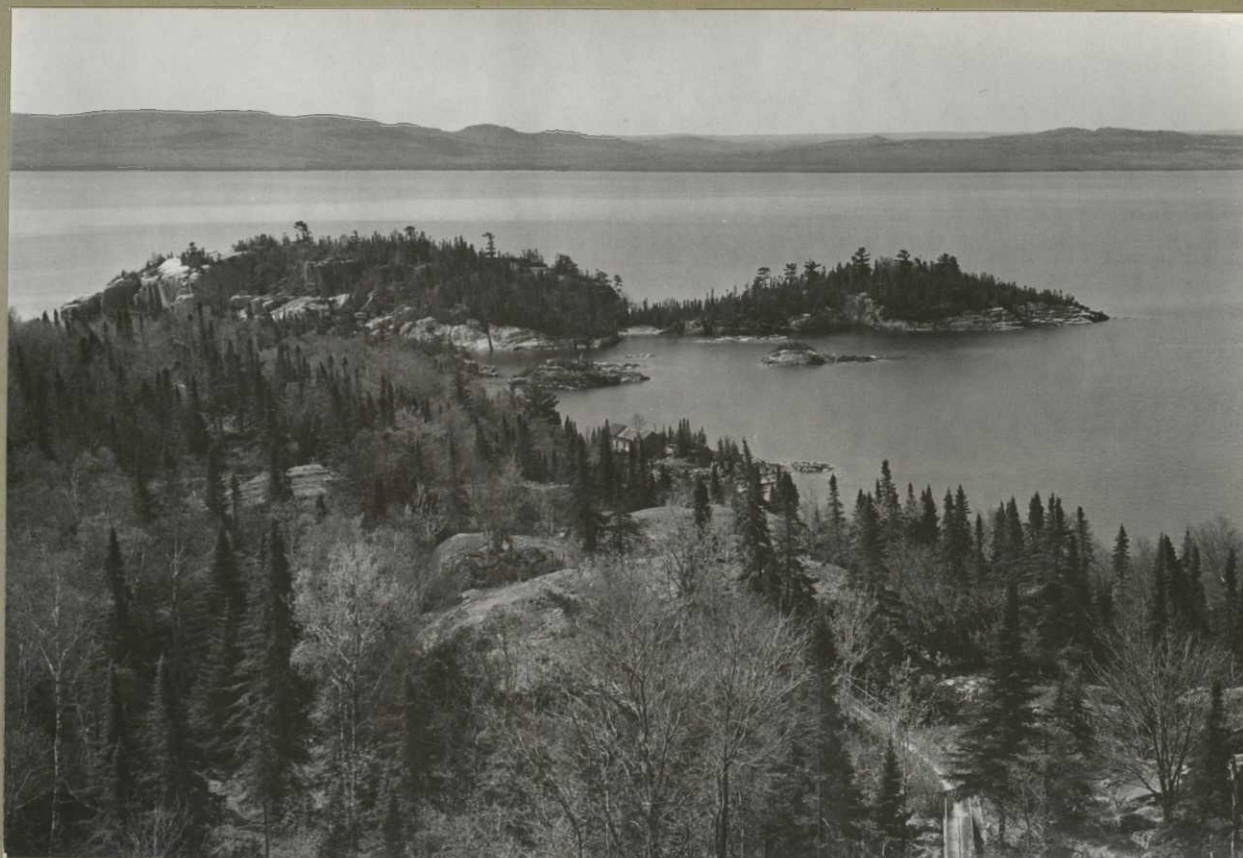


Fig. 68. Nature's masterful handwork is often exhibited  
in true gems of art.

May 25, 1966

R 118-9

Hakala







Nelson: 252-5363  
DEPARTMENT OF THE INTERIOR  
Fish and Wildlife Service Regional Information

BUREAU OF SPORT FISHERIES AND WILDLIFE

Northern Prairie Wildlife Research Center  
Box 1672  
Jamestown, N. Dak.

For Release to PM's Dec. 1, 1966

MINNEAPOLIS, MINN. --Dr. Glen A. Sherwood, biologist at the Northern Prairie Wildlife Research Center, Jamestown, N. D., has been cited for his outstanding publication, "Canada Geese of the Seney National Wildlife Refuge".

The citation and a cash award of \$150 was announced today by the Bureau of Sport Fisheries and Wildlife.

Data for the publication was collected by Dr. Sherwood at Seney National Wildlife Refuge, Michigan, from 1962 to 1965.

In announcing the award, Bureau Director John S. Gottschalk said the publication was the first ecological study of the Canada goose east of the Mississippi River. Information therein will have an impact on management of geese in the Mississippi Flyway, he added.

Dr. Sherwood left the Seney Refuge in Michigan's Upper Peninsula in 1965 to become a staff member at the Bureau's wildlife research center at Jamestown, North Dakota. He is a native of North Dakota.

